

NELSON'S ENCYCLOPÆDIA

VOL. XIV.

K — Lytton

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LIST OF CONTRACTIONS USED IN THIS WORK.

a.c., acres.	Gr., Greek.	stn., station.
agric., agricultural.	Heb., Hebrew.	s.v., under the word.
alt., altitude.	I., isl., island.	Syriac.
anc., ancient.	ibid., the same.	temp., temperature.
ann., annual.	i.e., that is.	terr., territory.
Ar., Arabic.	in., inches.	trans., translated.
Aram., Aramaic.	Ital., Italian.	trib., tributary.
arrt., arrondissement.	Lat., Latin.	U.S.A., United States of
A.S., Anglo-Saxon.	lat., latitude.	America.
aver., average.	L bk., left bank.	vill., village.
bor., borough.	lit., literally.	vol., volume.
bur., burgh.	long., longitude.	W., west.
c. (circa), about.	m., miles.	wat.-pl., watering-place.
cap., capital.	mrkt. tn., market-town.	yds., yards.
cf., compare.	Mts., mts., mount, moun-	—
co., county.	tain, -s.	Railways—C.R., Cal-
Comm., Commission.	munic., municipal.	donian Railway;
comm., commune.	N., north.	C.P.R., Canadian Paci-
cub. ft., cubic feet.	N.T., New Testament.	fic Railway; G.E.R.,
Dan., Danish.	O.T., Old Testament.	Great Eastern Railway;
dep., department.	par., parish.	G. & S.W.R., Glasgow
dist., district.	parl., parliamentary.	and South-Western
div., division.	Per., Persian.	Railway; L. & N.W.R.,
Du., Dutch.	pop., population.	London and North-
E., east.	Port., Portuguese.	Western Railway;
eccles., ecclesiastical.	prov., province.	N.B.R., North British
ed., edition; edited.	q.v., which see.	Railway, etc., etc.,
e.g., for example.	R., riv., river.	Bibliography—Biog.
Eng., English.	r. bk., right bank.	Dict., Biographical
episc., episcopal.	R.V., Revised Version.	Dictionary; Encyc.
est., estimated.	ry., railway.	Brit., Encyclopaedia
et seq., and following.	ry. jn., railway junction.	Britannica; Proc.
F., Fahrenheit.	S., south.	Royal Geog. Soc., Pro-
fort. tn., fortified town.	Sans., Sanskrit.	ceedings of the Royal
Fr., French.	seapt., seaport.	Geographical Society;
ft., feet.	Sp., Spanish.	JOUR., Journal; Hist.,
Ger., German.	sp. gr., specific gravity.	History; Mag., Maga-
gov., government.	sq. m., square miles.	zine, etc., etc.

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K

K is the voiceless back stop; before utterance the breath is stopped by raising the back of the tongue. The sound varies according to the vowel which follows. Every *k* has a corresponding voiced stop, or *g*. In Semitic languages two *k*'s are regularly distinguished in writing. K and Q are the Latin forms of the symbols for these two *k*'s. In the Latin alphabet, and in the alphabets derived from it, the sound *k* is generally expressed by the symbol *c*, and *k* itself, for the most part, is rarely used. In the German alphabet, however, *k* is the usual sign. When *c* became ambiguous in English (see C), the use of *k* increased. In recent years the employment of *k* has become general in the English spelling of foreign words ('Koran,' not 'Coran'). Initial *k* before *n* has now become silent ('know,' etc.).

In the early Semitic alphabet K faced to the left, and the perpendicular stroke was long; Hebrew ק has lost one of the side strokes, and ק is a rounding of that form. In the Greek minuscule the attempt to write K in one stroke gives a form like u. The Semitic name *kaph*, Greek *kappa*, means 'palm' (of the hand).

K², peak of the Western Himalaya. See GODWIN-AUSTEN.

Kaaba, the sanctuary, at Mecca, of the 'black stone,' the centre formerly of pagan, now of Islamic worship. Tradition associates the Kaaba with Abraham's casting out Hagar and Ishmael. The 'black stone' is an aerolite. See MECCA.

Kaaden, tn., Bohemia, 55 m. N.W. of Prague; has a mediæval church, founded by the Knights of St. John. Pop. (1911) 8,627.

Kaalund, HANS VILHELM (1818-85), Danish poet, born at Copenhagen. His chief works are *Fabler* (1844); *Fabler for Børn* (4th ed. 1884); *Et Foraar* (6th ed. 1886); *Fulvia* (5th ed. 1903), a lyric drama; and *En Eftervaar* (4th ed. 1889).

Kaap, or DE KAAP, gold fields in the Transvaal, British S. Africa, near Barberton.

Kabardia, fertile dist. on N. side of Caucasus, in Terek gov. of Russia; extends N. to the rivers Malka and Terek. Area, 3,800 sq. m. The Kabardintai (32,000) is the only tribe of the Adighe (Circassians) which remains in the Caucasus. Pop. 70,000. The chief town is Nalchik.

Kabba, prov. of N. Nigeria, crossed by 8° N. and 6° w. Area, 7,800 sq. m.; pop. 200,000. The



Pilgrims at the Kaaba, Mecca.

(Photo by M. Courteillemont.)

chief town is Lokoja, and the cap. Zungeru. The town of Kabbala lies 50 m. w. by n. of Lokoja. The products include palm oil, kolias, shea, rubber, tobacco, cotton, and grain.

Kabbala. See CABBALA.

Kabinda. (1.) Portuguese territory, W. Africa, bounded on the w. by the Atlantic, on the N. and N.E. by French Congo, and on the S. and s.e. by Belgian Congo. Area, 3,000 sq. m. (2.) Chief tn. of above territory, beautifully situated on the coast in $5^{\circ} 33' S.$ It was at one time a famous slave mart. Pop. 10,000.

Kabir. Hindu religious reformer, lived at Benares about the close of the 14th century; endeavoured to blend Hinduism with Mohammedanism, and was the teacher of Nanak, founder of the Sikh faith. See M. A. Macauliffe's *The Sikh Religion*, vol. vi. (1909).

Kabrali, KAIKHOSROO NOWROJI (1842-1904), Parsee journalist, was editor of *Rast Goftar* (1863-1904), an Anglo-Gujarati weekly, published at Bombay. He did much, by original dramas and novels and by translations of English classics, to spread the knowledge of Gujarati. He also wrote on social and religious questions.

Kabru, peak of the Himalaya, in Nepal, s.w. of Kanchananga. Alt. 24,000 ft.

Kabul. (1.) City, capital of Afghanistan, 190 m. w.n.w. of Peshawar, nearly 7,000 ft. above sea-level, on the Kabul R. It has an arsenal and a mint, and trades in carpets, soap, shawls, silk and cotton goods. Much fruit is grown in the vicinity. The Bala Hissar, a former residence of the Ameer, dominates the city. Kabul was in 1879 the scene of the murder of the British envoy, Sir Louis Cavagnari. It was from Kabul that Lord (then Sir Frederick) Roberts set out, in August 1880, on his memorable march to

Kandahar. Pop. probably about 150,000. (2.) River of Afghanistan, which rises in the Hindu-Kush, and flows generally n. to its junction with the Indus at Attock. Length, 300 m.

Kabylia, a mountainous dist. of Algeria, to the n. of Algiers, and lying within the provs. of Algiers and Constantine. It is peopled by a Hamitic tribe of Berbers, the Kabyles, who long resisted French domination.

Kachin Hills, a district in Upper Burma; area about 19,000 sq. m. It is inhabited by some 64,000 Kachins (or Singphos), against whom many punitive expeditions have been sent.

Kadapa. See CUDDAPAH.

Kadesh, several places in Palestine and Syria. KADESCH-BARNEA (Gen. 14:7; Num. 13:26, etc.), in Arabia Petraea, 55 m. s. of Beersheba, was the headquarters of the Israelites for forty years prior to their entry into Canaan. From it Moses sent the spies to survey and report. Here also Miriam died, and Moses brought water from the rock.—KADESH OF ISSACHAR (1 Chron. 6:72) is near Taanach.—KADESH NAPHTALI (Josh. 12:22, etc.) is in Upper Galilee, with Jewish and Roman remains.—KADESH ON THE ORONTES (in the Greek version of 2 Sam. 24:6) is the ruined city Kades, south of Emesa.

Kadiak. See KODIAK.

Kadjia. See MOHAMMED.

Kadina, tn., Daly co., South Australia, 85 m. n.w. of Adelaide. Copper is mined in the vicinity. Pop. 1,700.

Kæmpeviser. See DENMARK—*Language and Literature*.

Kæmpferia, a genus of perennial tropical plants belonging to the order Scitaminaceæ. All the species are natives of Africa or Asia, and have mostly fleshy roots. Kæmpferias are not difficult of cultivation in the stove, a peaty soil being desirable. No

water should be given during the period of hibernation.

Kaf. (1.) A mythical mountain range supposed by the Mohammedans to encircle the world, and to be the home of the giants, jinns, and fairies. (2.) A Turkish equivalent for the Epicurean *ataraxia*, or life of ease.

Kaffa. (1.) Or GOMARA, trib. state of Abyssinia, in the Galla country, 7° N. and 36° 30' E. Exports coffee to Mocha. Area, 5,000 sq. m. Some of the natives profess a corrupt Christianity. The chief town is Bonga. (2.) See THEODOΣΙΑ.

Kaffir Beer (*tchwala*) is prepared from malted millet or Kaffir corn, which is crushed and allowed to ferment. It is widely used as a remedy in cases of wasting diseases amongst the natives.

Kaffir Bread, the pith of the young shoots of *Encephalartos caffer*, or bread-tree, a S. African cycad with a short cylindrical trunk and a terminal crown of coriaceous leaves. It is eaten by the natives.

Kaffir Corn. See DURRA.

Kaffirs (properly spelled KAFFIRS; formerly CAFFRES) are the predominant native people of S. Africa, between the Zambezi R. and the Cape. The term Kaffir is an Arabic word for 'infidel,' and gives its name to Kafiristan (N.W. India) as well as to Kaffiria (S.E. Africa). But although thus derived, this name is now specially applied by Europeans to the Bantu of S. Africa. It is somewhat elastic in its application, however. The Bechuanae, for example, do not strictly belong to the Kaffir group. The Basutos, also, and the Mashonas, although of Bantu stock, are differentiated from the true Kaffirs, whose noblest characteristics are typified by the Zulus. The link uniting the various Kaffir nations is mainly one of

language. They are a mixed people, in all cases of negroid type, but often showing a strong infusion of Arab or Galla blood, especially in the families of chiefs. This intermixture is assigned to times long antecedent to their advent in the region S. of the Zambezi. Dr. Latham regarded the Kaffir area as extending from the Cape to the equator, and even beyond. The name Kaffraria, however, is now restricted to the littoral between the Kei R. and Natal, although formerly it included all the territory between the Great Fish R. and Delagoa Bay. Today the Kaffirs are all subject, either directly or indirectly, to British rule. In the Cape of Good Hope, Natal, Orange Free State, and the Transvaal, they are more or less Europeanized, and work in the mines, in the construction of roads and railways, as farm labourers, and as domestic servants. In Basutoland, Bechuana-land, and Swaziland the native monarchies are preserved free of white control, beyond a reasonable supervision exercised by resident commissioners, order being maintained by native police under British officers. There are, moreover, numerous large 'locations,' or 'reserves,' throughout the other South African provinces, within whose limits the tribal life is continued; and even those Kaffirs who live on the estates of colonials are still partially under the authority of their chiefs. Each hut throughout British S. Africa pays a yearly tax to government, varying from 10s. to £1; and revenue duties are also laid on Kaffir beads, picks, hoes, blankets, shawls, and unmanufactured tobacco. Otherwise, the native organization, in these semi-independent territories, is intact. Under the peaceful conditions of recent years the

Kaffirs have steadily increased in number, there being approximately over 610,000 in Cape of Good Hope and British Bechuanaland, 837,000 in Natal, and 700,000 in the Transvaal. See *The Natives of South Africa*, ed. by the S. African Native Races Committee (1901); Theal's *History of South Africa* (new ed. 1907-10); Statham's *Blacks, Boers, and British* (1882); Widdicombe's *Fourteen Years in Basutoland* (1892); the works of Dudley Kidd (*Kaffir Socialism*, 1908, etc.); and Hepburn's *Twenty Years in Khamá's Country* (1895).

Kaffraria. See KAFFIRS.

Kafiristan (*kafir*, a Mohammedan word for an 'infidel') is the territory on the s. slope of the Hindu-Kush, between Afghanistan and Kashmir. Spurs from the Hindu-Kush spread over the whole country, which is watered by tributaries of the rivers Indus and Kabul. The inhabitants, pastoral tribes called Siahposh, are backward in civilization, and practise polygamy. They were subdued by the Ameer of Afghanistan in 1895, Mohammedanism being then forced upon them. The country is of strategic importance owing to its command of the passes of the Hindu-Kush. Area, about 5,000 sq. m.; pop. between 100,000 and 200,000. See Sir G. S. Robertson's *Kafirs of the Hindu-Kush* (1896); and Kipling's story, *The Man who would be King*.

Kaftan, JULIUS (1848), German theologian, born near Apenrade in Schleswig-Holstein, was called to a professorship at Basel in 1881, two years later he succeeded Dörner at Berlin. His principal works are, *Das Wesen der christlichen Religion* (1881); *Die Wahrheit der christlichen Religion* (1884; trans. 1895); *Dogmatik* (1897, 4th ed. 1901), and *Christentum und Nietzsche's Herrenmoral* (3rd ed. 1902). In general, Kaftan is an adherent of the so-called school

of Ritschl, and his *Dogmatik* is the best and most complete systematic treatise that has issued from that party. See Lichtenberger's *Hist. of German Theol. in 19th Cent.* (trans. and ed. by W. Hastie, 1889), 585 f.; and Pfleiderer's *Die Ritschl'sche Theologie*, pp. 100-122.

Kaga, or **KASHIU**, tn., Japan. See KANAZAWA.

Kagera. See ALEXANDRA NILE.

Kagoshima, tn., Japan, 90 m. s.s.e. of Nagasaki, at the s. end of Kiusiu I., in prov. of Satsuma, of which it is the capital. It manufactures Satsuma faience, arms, cottons, and cigarettes. It was bombarded by the British on Aug. 15, 1863. The town was the head of the Satsuma rebellion in 1877. Pop. 65,000.

Kagu (*Ehinochetus jubatus*), a curious bird found only in New Caledonia, and though generally resembling a heron, it is apparently most nearly allied to the cranes. It is rather bigger than the common fowl, with a powerful heron-like bill, and nostrils overhung by a rolled-up membrane. The plumage is of a slate-gray colour, and there is a long pendent crest on the head; the bill and feet are orange-red. The bird is now rare; it seems to be nocturnal, and feeds on worms, molluscs, and insects.

Kahla, tn., Saxe-Altenburg, Germany, 50 m. s.w. of Leipzig; manufactures porcelain. Pop. (1910) 6,396.

Kahlur. See BILASPUR.

Kahnis, CARL FRIEDRICH AUGUST (1814-88), German Neo-Lutheran theologian, was born at Greiz, and became professor at Breslau (1844) and Leipzig (1850). He was a man of fine rhetorical and literary gifts, but an able popularizer rather than a profound thinker; and his inconsequent theology brought him much bitter controversy, not

least with his orthodox friends. His best-known works are *Die Lehre vom Heiligen Geist* (1847); *Die Lehre vom Heiligen Abendmahl* (1851); *Der innere Gang des deutschen Protestantismus* (1854; trans. by Meyer, 1856, as *A History of German Protestantism*), a valuable summary; *Die deutsche Reformation* (1872); *Die lutherische Dogmatik* (1874-5).

Kaiapoi, tn., South Island, New Zealand, 3 m. from the sea and 12 m. N. of Christchurch. Pop. 1,800.

Kaieteur, a cataract of the Potaro riv., an affluent of the Essequibo, British Guiana. Here the river descends 750 feet.

Kai-feng-fu, cap. of prov. Honan, China, 10 m. s. of Yellow R., enclosed in massive walls; is a place of busy trade. Under its ancient name, Pien-liang, it was the capital of the Sung dynasty (960-1126 A.D.). A Jewish community has existed here since 1183 A.D. Pop. about 200,000.

Kalliar, tn., Turkey, 40 m. s. by E. of Monastir. Pop. 40,000.

Kailas, or GANGRI, peak (22,000 ft.) of the Himalaya in W. Tibet; is looked upon by the Hindus as sacred; stands N.W. of Lake Manasarowar, and gives rise to the Indus, Sutlej, and Brahmaputra.

Kailyard School, a collective term applied to certain writers of fiction, who affect to describe humble Scottish life with much use of the vernacular and with excessive sentimentality. The term is derived from the song, 'There grows a bonnie brier bush in our kailyard,' from which 'Ian Maclaren' took the title for his series of sketches, *Beside the Bonnie Brier Bush* (1894). The chief of the 'Kailyarders' were Mr. J. M. Barrie (in certain works), Ian Maclaren (Rev. John Watson), and Mr. S. R. Crockett. See article on the Kailyard School by J. H. Millar in *New Review* (1895), and references in A

Literary History of Scotland (same author, 1903).

Kain. (1.) Prov. of E. Persia, bordering Afghanistan. It is a grazing country, the chief products being opium, saffron, wool, silk, almonds, and gums. The exports include carpets, silk, hides, and dyes. The pop. is about 220,000. The cap. is Birjand, 220 m. N.N.E. of Firman; pop. 25,000 to 30,000. (2.) Town in above prov., 60 m. N. of Birjand. Pop. 5,000.

Kainite, a mineral composed of magnesium sulphate and potassium chloride, found at Stassfurt, Saxony. It occurs as a grayish to yellow granular mass, and is a valuable source of potassium salts.

Kalpara Harbour, inlet, w. coast of North I., New Zealand, in $36^{\circ} 25'$ s.; the outlet for the kauri pine industry.

Kalping, tn., China, prov. Pechili, 75 m. N.E. of Tientsin; with coal mines (at Tang-shan and Lin-si), iron mines, and cement works.

Kaira, or KHEDA, munic. tn. and ancient city, Kaira dist., Gujarat, Bombay, India, 22 m. s. by E. of Ahmadabad. It is surrounded by walls, and has a richly decorated Jain temple. Pop. 11,000. The district has an area of 1,609 sq. m., and a population in 1901 of 720,000.

Kairana, munic. tn., Muzaffarnagar dist., United Provinces, India, 60 m. N.N.E. of Delhi. Pop. 20,000.

Kairwan, decayed tn., 'the Mecca of N. Africa,' Tunis, 85 m. s. of Tunis. It is a place of Moslem pilgrimage. The chief industries are the making of copper vessels, potash, saltpetre, morocco leather, and carpets. Pop. 20,000.

Kaisarieh (anc. *Cæsarea*), tn., vilayet of Angora, Asiatic Turkey, 180 m. s.e. of Angora. Greek and Roman Catholic bishops and

an Armenian archbishop have their seats in the town. Pop. estimated at 72,000. See CESAREA.

Kaiser, the Teutonic equivalent for Caesar, commonly used in speaking of the emperors of Germany. It is also sometimes used of the emperors of Austria.

Kaiserafahrt, the navigable channel of the mouth of the Oder, Prussia, about 3 m. long, connecting the Stettiner Haff with the Swine R.

Kaiserslautern, tn., Bavaria, prov. Palatinate, 42 m. by rail w. of Mannheim, with manufacture of cottons, woollens, furniture, sewing-machines, tobacco, iron and steel, beer, and bricks, also railway works and sawmills. Near here, in 1793 and 1794, the French suffered three defeats by the Prussians. Pop. (1910) 54,665.

Kaiser Wilhelm II. See NORD-DEUTSCHER LLOYD.

Kaiser Wilhelm Canal, also known as the North Sea-Baltic Canal, in Schleswig-Holstein, is 61 m. long, and extends from near Brunsbüttel on the Elbe to Holtenau on Kiel Bay. Breadth, at bottom, 72 ft.; at surface, 213 ft.; depth, 29 $\frac{1}{2}$ ft. Begun in June 1887, the canal was opened in June 1895. The canal is being widened and deepened, to admit the largest men-of-war and other vessels. In 1910, 38,547 vessels, with a registered tonnage of 6,527,698 tons, used the canal.

Kaiser Wilhelm's Land, the n. part of German New Guinea, was declared a German protectorate in 1884. Area, 70,000 sq. m. The surface generally is mountainous. The chief productions are areca, sago, and cocoa palms, bamboos, ebony, cotton, coffee, and tobacco. The natives trade in copra, mother-of-pearl, and trepang. Seat of government, Herbertshöhe in Bismarck Archipelago. Pop. 110,000.

Kalsong, or SONG-DO, tn., Korea, 35 m. n.w. of Seoul, was

the capital from 910 to 1392. It manufactures ginseng and oiled paper. Pop. 60,000.

Kaitangata, tn., South Island, New Zealand, in Bruce co., 45 m. s.w. of Dunedin. Pop. 1,700.

Kaithal, or KYTHAL, ancient tn. and munic. in Karnal dist., Punjab, India, 50 m. s.w. by s. of Ambala; traditionally connected with Hanúmán, the monkey-god. It manufactures saltpetre, lac ornaments, and toys. Pop. 16,000.

Kakapo (*Strigops habroptilus*), an aberrant parrot found in wooded regions in New Zealand. Its powers of flight are exceedingly limited, and it is hunted by the natives on foot with dogs. It is nocturnal in habits, and feeds on moss, seeds, berries, and so on. It climbs well and walks swiftly. No nest is built, and the eggs are laid in burrows. The upper part of the body is green, with yellow and brown markings, the lower of a yellowish tint. The plumage is soft and owl-like, as is also the face. The bill is very powerful.

Kakodyle. See CACODYL.

Kalafat, or CALAFATU, fort. tn., Roumania, on l. bk. of Danube, opposite Vidin. In 1854 it was the scene of a defeat of the Russians by the Turks. It has a trade in grain. Pop. 7,000.

Kalahandi, or KAROND, feudatory state, Central Provinces, India. Area, 3,745 sq. m. Pop. 350,000.

Kalahari, a large basin or undulating depression of the South African plateau, reaching from the Orange River to the Zambezi, probably 400 m. from E. to W., and 600 from N. to S. Its general elevation is from 3,000 to 4,000 ft. The soil is for the most part red sand, and there are numerous sand dunes and kopjes. Livingstone's Lake Ngami is the last remnant of the once numerous salt-pans. Estimated area,

200,000 sq. m., with a population of some 50,000.

Kalahasti, or KALASTRI, tn. in N. Arcot dist., Madras, India, 52 m. s. by w. of Nellore. Pop. 12,000.

Kalamata, or KALAMAI, seapt., Greece, cap., nomarchy of Messenia, at the head of the Gulf of Korone, 17 m. s.w. of Sparta. Oranges, figs, mulberries, silk, and olives are exported. The first national assembly of Greece was held here in 1821. Pop. (comm.) 20,000.

Kalamazoo, city and co. seat of Kalamazoo co., Michigan, U.S.A., on the Kalamazoo R., 47 m. s. by n. of Grand Rapids. Its industries include paper, machinery, and wagon-making. Pop. (1910) 39,437.

Kalanao, a leper settlement, Inolokai, Hawaiian Islands, with churches, public buildings, and a children's home. It was established in 1865. A fine monument marks the grave of Father Damien, the missionary.

Kalanchoe, a genus of tropical shrubs belonging to the order Crassulaceae, mostly natives of Asia or Africa. They have succulent leaves, and showy cymes of large purple, yellow, or scarlet flowers, each with four sepals, four petals forming a salver-shaped corolla, eight stamens, and four carpels. Among the best for stove cultivation are *K. farinacea* and *K. grandiflora*.

Kalantan, or KELANTAN, (1.) A state on E. coast of the Malay Peninsula, immediately s. of the Patani States. It was tributary to Siam until 1909, when it was ceded to Great Britain. The chief products are rice, cocoanuts, nuts, rubber, pepper, sugar, and maize. Gold, lead, and tin are also mined. The area is 5,000 sq. m., and the pop. 300,000. The cap. is Kota Bharu, 140 m. E.N.E. of Penang. Pop. 10,000. See *Kelantan*, by W. A. Graham

(1908). (2.) Tn. in above state, 150 m. E.N.E. of Penang. Pop. 20,000.

Kalat. See KHÉLAT.

Kalatch, river port, on the Don, in S. Russia, connected with Tsaritsyn (45 m. n.) on the Volga.

Kalat-i-Ghilzai, fort, Afghanistan, 75 m. N.E. of Kandahar, noted for its defence against the Afghans in 1842. The 12th Pioneers are still known as the 'Kalat-i-Ghilzai Regiment' in consequence.

Kalbe, tn., Saxony. See CALBE.

Kale, or BORECOLE, a section of cabbages which do not 'heart' after the manner of the common cabbage. All are very hardy.

Kaleidoscope, an optical instrument invented by Brewster about 1815, became very popular as a toy. It consists essentially of a tube, within which are fixed longitudinally two mirrors at an angle which is any even submultiple of 360°, in practice generally 60°; an eyepiece at one end; and an object-box containing fragments of coloured glass at the other. On shaking the instrument, an infinite series of always symmetrical patterns is presented. See Brewster's *Treatise on the Kaleidoscope* (2nd ed. 1858).

Kale-i-Sultanieh, or CHANAK KALESSIA, seapt., Turkey in Asia, on E. side of Dardanelles, 20 m. S.W. of Gallipoli. It is strongly fortified. There are manufactures of pottery. Pop. 10,000.

Kalende. See CALENDAR.

Kalevala, the national epic of the Finns, written in the same metre as Longfellow's *Hiawatha*, was collected and strung together out of scattered fragments by Lönnrot (1835; definitive ed. 1849). It relates the conflicts between the brothers Wäinämöinen and Ilmarinen and their enemy Lemminkäinen. Magic, especially the magic 'mill' *sampo*, plays a

great part in the story. Eng. trans. by J. M. Crawford (1889).

Kalgan, or CHANG-CHIA-KU, walled frontier town of N. China, prov. Chi-li, 110 m. n.w. of Peking (with which it has been connected by railway since 1909), in $40^{\circ} 50' N.$, $114^{\circ} 55' E.$, on the main route across Mongolia from Peking to Kiakhta, in Siberia, and an important centre of the tea trade. Much soda is manufactured. Pop. estimated at 70,000.

Kalgoorlie, tn., E. Coolgardie gold fields, W. Australia, 340 m. E.N.E. of Perth. Pop. (tn.) 18,000; dist. 30,000.

Kall. See ALKALI.

Káli, Indian goddess of destruction, was the wife of Siva. It was in her honour that the Thugs used to strangle their victims.

Kálidásá, Indian poet, belongs to the post-Vedic period of Sanskrit literature. Tradition assigns him to the 1st century B.C.; modern scholars to the 3rd century A.D. He wrote three famous plays —*Sakuntala*, *Vikramorvási*, and *Agnimitra*, of which the first was translated by Sir William Jones (1789), and again by Monier Williams (new ed. 1890); also two epics, besides lyrical pieces. One of these epics, the *Raghu-Vamça*, was translated into English verse by P. de Lacy Johnstone (1902).

Kalif. See CALIF.

Kalimno, or KALYMNOS, isl. off s.w. coast of Asia Minor, 15 m. N.W. of Cos. It is noted for its honey, and is the headquarters of the sponge industry of the Levant. Chief town, Kalimno, on s.e. coast. Area of island, 42 sq. m. Pop. 9,000.

Kalinga, one of the nine ancient kingdoms of S. India, supposed to have extended along the E. coast of Madras, from 13° to 18° N.

Kalingapatam, tn. and port, Madras, India, on Bay of Bengal, 95 m. s.w. of Ganjam; the only

safe roadstead in 400 m. of coast during the s.w. monsoons. Pop. about 5,000.

Kalisz. (1.) Province of Busian Poland, touching Prussia on w. and N.W. Area, 4,377 sq. m. Pop. 1,030,000. The surface is mostly sandy and flat. Agriculture is comparatively advanced; kitchen-gardening and cattle-raising flourish. Important industrially, it manufactures cottons, cloth and ribbons, cement, soap, candles, vinegar, pottery and glass, spirits, sugar, beer, tobacco, leather, and flour. Of the people over 800,000 are Roman Catholics, nearly 80,000 Protestants, and about 70,000 Jews. (2.) City of Russian Poland, cap. of Kalisz dist., some 130 m. w.s.w. of Warsaw. It is the see of a Roman Catholic bishop, and an educational and industrial centre. It is the *Calisia* of Ptolemy, and one of the finest cities of Poland. Pop. 25,000, about one-third Jews.

Kalk, former tn., Prussian prov. of Rhineland, on the Rhine, opposite Cologne, with which it is now incorporated; has iron works, chemical, machinery, and other factories, breweries, and brick works.

Kalkandele, tn., Turkey, in Kosovo, 25 m. w. of Uskub. Pop. 15,000.

Kalk Bay, seaside resort on n.w. shore of False Bay, Cape of Good Hope, 12 m. s. of Cape Town.

Kaliadakurichi, tn., Tinnevelly dist., Madras, India, 15 m. w. by s. of Tinnevelly. Pop. 15,000.

Kalmar, cap. of Kalmar gov., Sweden, on Kalmar Sound, opposite the isl. of Oland, 200 m. s. by w. of Stockholm, has a fine cathedral (1660-99), and Kalmar Castle, a 12th century edifice, the strongest fortification in Sweden during the Middle Ages. It has shipbuilding yards,

tobacco, chicory, and match manufactures, and exports wood and joinery. Here was drawn up (1397) the Act of Union between Sweden, Norway, and Denmark. Pop. 15,000.

Kalmia, a genus of hardy evergreen American shrubs belonging to the order Ericaceæ, valuable as ornamental plants and for their hardiness. The best known species is *K. latifolia*, the so-called American laurel, or calico bush.

Kalmuks, KALMUCKS, or CALMUCKS, a section of the Mongol race, found in three main divisions: (1) on steppe of lowest Volga valley, around Astrakhan; (2) in Zungaria, Kulja, and adjacent regions of Chinese Central Asia; (3) in Tsaidam, Koko-nor, and other parts of N. Tibet and S.W. Mongolia. In districts (2) and (3) the Kalmuks are called Eleuths or Oliuts. Their chief historical centre has been in Zungaria, where they founded a short-lived empire in the 17th and 18th centuries. From the Volga steppe took place, in 1771, the famous migration of the Kalmuks (70,000 families) from Russia to Chinese territory, described by Pallas, De Quincey, and others. At present 180,000 Kalmuks are reckoned under Russian rule. In Chinese territory their number is estimated at about half a million. See MONGOLS.

Kalna, or CULNA, tn., Bardwan dist., Bengal, India, on r. bk. of Bhagirathi, 42 m. N.N.W. of Calcutta, with handsome Hindu temples. Pop. 8,000.

Kainokey, GUSTAV SIEGMUND, COUNT (1832-98), Austrian statesman, born at Lettowitz, of an old Transylvanian family; was ambassador at St. Petersburg (1880), and minister of foreign affairs (1881-95). He was specially instrumental in bringing about more amicable relations between Russia and Austria, but his friend-

liness did not prevent him from effectively opposing the intrigues of Russia in Bulgaria (1896).

Kalocsa, tn. and R.C. archiepisc. see, Hungary, near l. bk. of Danube, 86 m. by rail s. of Budapest. It possesses a fine cathedral, an archiepiscopal palace, and an observatory. The chief products are wine, fruit, flax, and cereals. Pop. 12,000.

Kalomo, tn., N.W. Rhodesia, 90 m. N.E. of the Victoria Falls. It was formerly the administrative centre, now transferred to Livingstone. Pop. 5,000.

Kalpasūtras, a series of manuals of ceremonial in connection with the Vedic sacrifices. Together they form one division of the *Vedāngas*, treatises supplementing the *Vedas* and *Brāhmaṇas*.

Kalpi, or CALPEE, tn., Jalaun dist., United Provinces, India, on r. bk. of Jumna, 45 m. s.w. of Cawnpur. It has manufactures of cotton, etc. Pop. 10,000.

Kalubich, or QALIUBIA, gov., Lower Egypt, on E. of Nile and N. of Cairo. Area, 352 sq. m. Pop. 435,000.

Kaluga. (1.) Government of Central Russia, bounded by Moscow on the N. Area, 11,940 sq. m. Pop. 1,300,000. The Oka is the chief river. Iron, coal, and copper are mined. The chief industrial establishments are iron works, cotton, match, paper, and cloth manufactures, tanneries, distilleries, and oil works. (2.) City and episc. see, cap. of above gov., on l. bk. of Oka, 100 m. s.w. of Moscow. There are manufactures of candles, starch, pottery, and agricultural machinery. Pop. 50,000.

Kalusz, tn., Austrian Galicia, 32 m. by rail W.N.W. of Stanislaw; with salt mines. Pop. (1911) 8,660.

Kalutara, or CALTURA, seapt. on w. coast of Ceylon, 25 m. s.s.e. of Colombo. Pop. 10,000.

Kalwarya, tn., Poland, gov. of and 25 m. N.N.E. of Suwalkie. Pop. 9,000.

Kalyan, tn., India, in Presidency of and 30 m. N.E. of Bombay. Pop. 11,000.

Kalymnos. See KALIMNO.

Káma, or KÁMÁDEVA, the Indian god of love. He is represented as riding on a sparrow, holding in his hand a bow of sugar-cane and five arrows—the five senses.

Kama, riv. of E. Russia, the most important affluent of the Volga, having a length of 1,170 m., and a basin of 202,600 sq. m. It rises in Vyatka government, and flows almost due N., then N.E., s., s.w., and w., and falls into the Volga 40 m. below Kazan.

Kamala, a granular reddish powder, consisting of the small glands and hairs from the surface of the capsules of the Indian tree *Mallotus philippinensis*. Its value in medicine as an anthelmintic depends on a resin, which constitutes four-fifths of its weight. It is a powerful gastrointestinal irritant.

Kamchatka, peninsula in E. Siberia. A range of mountains averaging from 4,000 to 5,000 ft. runs down the centre. Volcanoes are very numerous, twelve being active, among them being Klyuchevskaya (over 16,000 ft.). The Kamchatka R. (300 m.) is the longest stream, and is navigable by boats to Sherom. Iron, copper, mercury, sulphur, and coal exist. Chief occupations: fishing, seal and walrus hunting, and the chase—especially for sable furs. The climate is severe. The winds are very violent, and snow falls to a great depth. The population consists principally of Kamchadales, with a large proportion of Russians and a few Koryaks. Area, 104,300 sq. m. Pop. 8,400.

Kamen, tn., Rhine province, Prussia, 9 m. s.w. of Hamm. Pop. (1910) 10,583.

XIV.

Kamenets-Podolsk, tn., S.W. Russia, cap. of Podolia gov., 250 m. N.W. of Odessa, on a tributary of the Dnieper. It has a brewery, and tobacco, wadding, and mineral water manufactories. Pop. 36,000, including a large number of Jews.

Kamenskaya, tn., territory of the Army of the Don, S. Russia, 65 m. N. of Novo-Cherkask, on the r. bk. of the N. Donets. Pop. 24,000.

Kamenz, tn., kingdom of Saxony, 32 m. by rail N.E. of Dresden; birthplace of Lessing (1729-81). The chief products are cloth, wool, pottery, and glass. Pop. (1910) 11,533.

Kamerun, or CAMEROON, German protectorate of W. Africa, 191,000 sq. m. in area; extends for some 200 m. along the Bight of Biafra. It lies between British Nigeria and the French Congo. Its northern boundary runs for 40 m. along the s. shore of Lake Chad. Kamerun Mt., or Mongama-Loba, is an isolated volcanic mass rising some 13,700 ft. on the coast. Coffee, cocoa, tobacco, rice, manioc, yams, and cotton are grown. The natives are Bantu on the coast lands, and Sudanese in the interior. Rubber, palm kernels, palm oil, ivory, cocoa, copal, copra, and kola nuts are exported. Iron, gold, and indigo are other products. Kamerun was made a German protectorate in 1884. The seat of government has been at Buéa since 1901, but the largest town is Duala (Kamerun). Pop. 3,500,000 (about 1,300 Europeans).

Kames. See ESKERS.

Kames, HENRY HOME, LORD (1696-1782), Scottish judge and metaphysical writer, born at Kames, Berwickshire, and was elevated to the bench (1752). He was a voluminous writer, with a considerable knowledge of law and a taste for metaphysics. See Tytler's *Life and Writings of*

Hon. Henry Home of Kames
(1807).

Kaministiquia, riv. of Canada, rising in s.w. of Lake Nipigon, Ontario, and flowing s. and e. to enter by three arms into Thunder Bay, Lake Superior. On it is the Kakabeka Fall (150 ft. wide and 130 ft. high).

Kamishin, tn., E. Russia, Saratov gov., 110 m. s.s.w. of Saratov city, on r. bk. of Volga. Pop. 16,000.

Kamloops, tn. in Yale dist., British Columbia, Canada, 170 m. N.E. of Vancouver city. Pop. 2,000.

Kampen, tn., prov. Overijssel, Netherlands, near mouth of the IJssel, 8 m. by rail n.w. of Zwolle. The finest buildings are the Gothic church of St. Nicholas, the Church of St. Mary (14th cent.) and the town hall. There are machine shops and cigar factories. Kampen was a member of the Hanseatic League. Pop. (1910) 19,745.

Kamperduin, or CAMPERDOWN, coast vil., Netherlands, prov. N. Holland, 27 m. N.W. of Amsterdam. Here Admiral Duncan defeated the Dutch fleet, under De Winter, Oct. 11, 1797.

Kämpfer, ENGELBERT (1651-1716), German traveller, born at Lemgo, Westphalia; travelled in Persia, Arabia, Malabar, Ceylon, Bengal, Sumatra, Java, and Japan (1690). Works: *Amoenitates Exoticae* (1712) and *History of Japan and Siam* (1727), published in English by Sir Hans Sloane.

Kampti. See KAMTHI.

Kamrup, dist. Eastern Bengal and Assam, India, in valley of the Brahmaputra. Rice, oil-seeds, timber, and cotton are exported. Area, 3,680 sq. m. Cap. Gauhati. Pop. 590,000.

Kamtschatka. See KAMCHATKA.

Kamthi, cantonment tn., Nagpur dist., Central Provinces, India, 8 m. N.E. of Nagpur. Exports grain and timber. Pop. 40,000.

Kamyshin. See KAMISHIN.
Kanagawa, seapt., Hondo, Japan, on Tokyo Bay, 2 m. N.N.W. of Yokohama. As a treaty port it was superseded by Yokohama in 1858. Pop. about 12,000.

Kanakas, general term for South Sea Islanders, used by the whites of Australasia, Polynesia, and the United States. Kanaka labour was formerly largely employed in Australia, especially in the Queensland sugar industry. Since the end of 1906 their importation has been prohibited. Kanaka, with variants *Tanata*, *Tana'a*, etc., is a Polynesian word meaning 'men.'

Kananur, or KANANORE, seapt. and military stn., Malabar dist., Madras, India, 53 m. N.N.W. of Calicut; exports grain, timber, and cocoanuts. Pop. 28,000.

Kanara, a strip of country on the w. shore of India, between the W. Ghats and the Arabian Sea. It embraces (1.) N. KANARA, with capital harbour, and an area of 3,910 sq. m., in the Bombay Presidency; the chief products are rice, timber, and salt. (2.) S. KANARA, with cap. Mangalore, and an area of 4,000 sq. m., in the Madras Presidency; rice is the staple crop, and tiles are manufactured. Pop.: N. Kanara, 455,000; S. Kanara, 1,135,000.

Kanarese, Dravidian people of S. India, some ten millions in number, and inhabiting the plateau of Mysore, part of S. Bombay, and the Kanara country. They possess an alphabet and a written literature, with works dating back to the 12th century. See DRAVIDIAN.

Kanaris, CONSTANTINE (1785-1877), a Greek naval hero who figured in the war of independence; born in the island of Psara. In 1822 he twice blew up the Turkish flagship, and in 1824 all but burned the whole fleet at Alexandria. He was minister of

marine (1854-5), and for short periods in 1862, 1864, and 1865 head of the government.

Kanauj, ancient city, Farukhabad dist., United Provinces, India, 50 m. N.N.W. of Cawnpur. In 1018 it was taken by Mahmud of Ghazni, and again, in 1194, by Mohammed Ghorri. Here, in 1540, Humayun was defeated by Sher Shah. Pop. 18,500.

Kanawha, GREAT, riv., U.S.A. See GREAT KANAWHA.

Kanazawa, cap. of prefecture of Ishikawa (which includes Kaga and Noto provs.), on w. coast of mainland of Japan, 125 m. N.E. of Kyoto, about $36^{\circ} 30' N.$, $136^{\circ} 40' E.$ Manufactures porcelain (Kutani), fans, silks, and inlaid bronzes. Pop. 110,000.

Kanchanjang, KINCHINJUNGA, or KUNCHINJUNGA, highest point of the Nepal Himalayas, N. India, rising to over 28,000 ft. In 1899-1900 it was visited by Mr. Douglas W. Freshfield. See his *Round Kangchenjunga* (1903).

Kan-chow, city of China, in prov. of Kiang-si, 190 m. N.N.E. of Canton. Pop. 20,000.

Kandahar, or CANDAHAR, fort. tn. and cap. of prov. of same name, in S. Afghanistan, in a fertile plain (alt. 3,500 ft.) 280 m. s.w. of Kabul. The chief products are cotton, wool, silk, and felt; gold is also found. Fruit is largely grown. It is the principal trade centre of Afghanistan. Traditionally founded by Alexander the Great, it was occupied by the British in 1839, and was successfully defended by General Nott in 1842. It was again entered by the British in 1879, and the following year was besieged by Ayub Khan, being relieved by General (now Earl) Roberts in August 1880, after a magnificent march from Kabul. Pop. (est.) 50,000.

Kandhla, munic. tn., Muzaffarnagar dist., United Provinces,

India, 35 m. N.W. of Meerut. Pop. 11,500.

Kandi, tn., India, in Bengal, district of and 25 m. s.s.w. of Murshidabad. Pop. 12,000.

Kandy, the old cap. of Ceylon, India, lies near the centre of the island, on an artificial lake, 75 m. by rail N.E. of the new cap., Colombo. The temple of the sacred tooth of Buddha attracts crowds of pilgrims. Much has lately been done to restore and preserve the unique Kandy decorations. Three miles distant are the botanic gardens of Peradenia. Tea, cocoa, pepper, cinchona, vanilla, areca nuts, cocoanuts, and coffee are cultivated. Pop. 26,500.

Kane, tn. in M'Kean co., Pennsylvania, U.S.A., 75 m. E.S.E. of Erie; has repair shops of Philadelphia and Erie Ry., lumber mills, and glass works. Pop. (1910) 6,626.

Kane, ELISHA KENT (1820-57), American Arctic explorer, born at Philadelphia; was surgeon and naturalist to the first Grinnell expedition in search of Sir John Franklin (1850-1), but commanded the second (1853-5). He published *The United States Grinnell Expedition* (1854) and *The Second Grinnell Expedition* (1856). See *Life by Elder* (1857).

Kane, SIR ROBERT JOHN (1809-90), Irish chemist, born at Dublin, and from 1831 to 1845 was professor of chemistry at the Dublin Apothecaries' Hall; professor of natural philosophy to the Royal Dublin Society (1834-47); president of the Royal Irish Academy (1877). His chief publications were *Elements of Practical Pharmacy* (1831); *Elements of Chemistry* (1841-3); and *Industrial Resources of Ireland* (1844).

Kanea. See CANEA.

Kanem, former state of the Sudan, Africa, now a district of the Shari territory, French Congo.

Area from 27,000 to 30,000 sq. m. It lies along the N. and E. shores of Lake Chad. The Kanembus number some 100,000, and have their chief settlements at Mao, to the E. of the lake, and at Ngigmi, near the N.W. end. From the 12th to the 14th century it was the centre of an extensive Mohammedan empire. It became French in 1903.

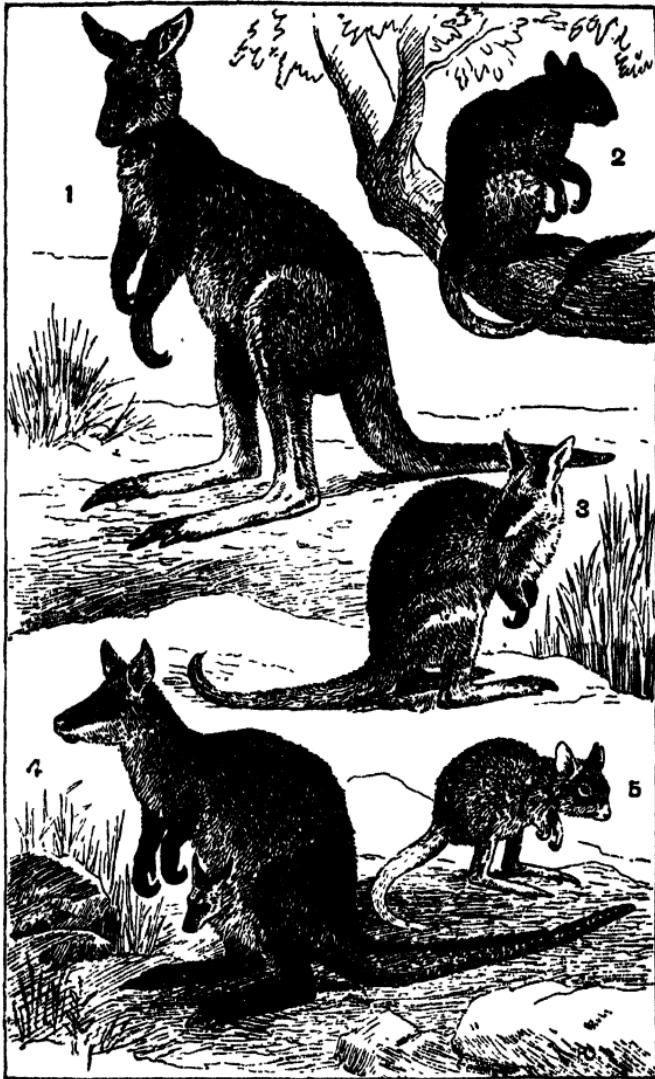
Kangaroo, a marsupial specially modified for progression by leaping; is confined to the Australian region. The great kangaroo, or 'boomer,' or 'old man' (*Macropus giganteus*), attains a height of about five feet when standing upright. The fore limbs are very short, the hind long, with powerful and elongated feet. The tail is long, thick, and tapering, and helps to support the body when the animal stands upright. The fore limbs bear five digits armed with strong claws; the hind have only four, and these strangely modified. The first (great) toe is absent; the second and third are long, but very slender, and are bound together by skin (syndactylous); the fourth is enormous, and takes the chief part in the support of the body; while the fifth, though only half its length, is also strong. The head is small, with pointed muzzle and large ears. In accordance with its purely vegetarian habits, we find that canine teeth are absent in the adult, though there is a small canine in the upper jaw in the young animal. The incisors are powerful, with a cutting edge. The fur is soft and woolly, and lighter in tint below than above. In the female there is a large pouch, in which the young are placed at birth. At this time they are minute—not more than an inch in length—and, being too immature to suck, have milk pumped into them by the mother. They remain within the pouch

until able to run by the side of the parent. Only one young one is produced at a birth. As regards internal organs, the stomach is large and complex, and the characteristic marsupial or epipubic bones are present. The giant kangaroo is an inhabitant of open plains, and occurs throughout most of Australia and Tasmania. In feeding, the kangaroos often go down on all fours; but the habitual method of progression is by enormous leaps. They are social animals—timid and inoffensive, save when brought to bay. In addition to the giant kangaroo, there are several allied species of *Macropus*, which inhabit rocky districts, such as the red kangaroo of Southern and Eastern Australia. The name wallaby, or brush kangaroo, is given to a group of small and highly-coloured species which occur in the dense scrub found in certain parts of Australia. An example is the red-necked wallaby (*M. ruficollis*) of New South Wales and Victoria. To the kangaroo family (*Macropodidae*) there also belong a number of smaller and much modified forms, such as the tree kangaroos (*Dendrolagus*) of New Guinea and Queensland, the rat kangaroos (potoroos), and others.

Kangaroo Apple, an Australian shrubby plant (*Solanum aviculare*) which grows to a height of about six feet, and bears oval yellow fruits that are edible.

Kangaroo Grass, a tall leafy grass (*Anthoxanthum ciliata*) which is common in Eastern tropical regions. It is characterized by having long, bent awns. It is valued as fodder for stock.

Kangaroo Hound has been evolved from the greyhound, crossed with the collie, with perhaps a strain of the aboriginal wild dog, or 'dingo,' of Australia. It stands about twenty-



Kangaroos.

1. Great Kangaroo. 2. Tree Kangaroo. 3. Agile Wallaby.
4. Black Wallaby. 5. Rat Kangaroo.

eight inches high, is shaped like a thick greyhound, but carries a bushy tail.

Kangaroo Island, S. Australia, at the mouth of the Gulf of St. Vincent, separated from Yorke's Peninsula by Investigator Strait. Its greatest length is 86 m.; greatest breadth, 30 m.; and area, 1,680 sq. m.

Kangaroo Valley, tn., New South Wales, in Camden and St. Vincent coos., 80 m. s.s.w. of Sydney. Pop. 2,000.

Kangra, or **NAGARKOT**, tn. and former cap. of dist. of same name, Punjab, India, 90 m. E.N.E. of Amritsar. The town has a population of 5,000. The district, lying between the river Beas and the Himalaya, has an area of 9,900 sq. m., and a population of 768,000. The headquarters are at Dharmasala. Tea plantations occupy some 10,000 ac. Other products are rice, opium, spices, and wool. Dharmasala was the centre of the earthquake which shook a large part of N.W. India on April 4, 1905, and, as well as Palampur, 22 m. farther east, suffered severely.

Kanizsa, two tns. of Hungary. (1.) **NAGY KANIZSA**, in Zala co., 135 m. s.w. of Budapest. Pop. 23,000. (2.) **O** or **OLD KANIZSA**, on the Theiss, 15 m. s. by w. of Szegedin. Pop. 16,500.

Kankakee, city, Illinois, U.S.A., co. seat of Kankakee co., 55 m. s. of Chicago. It is situated in an agricultural and stock-raising district. Limestone is abundant, and the manufactures include ploughs, starch, flour, and paper. Pop. 15,000.

Kankan, tn., French Guinea, W. Africa, in territory of same name, about 160 m. E. by s. of Timbo. It is a noted trade centre. Pop. 12,000.

Kankari, or **KYANKARI**, tn., Asia Minor, 60 m. N.E. of Angora. Pop. 15,000.

Kanna or **CANA**, tn., Dahomey, French West Africa, 8 m. s.E. of Abomey. Pop. about 6,000.

Kano. (1.) Prov. of N. Nigeria, between Sokoto and Borno. Area 31,000 sq. m. Pop. 2,300,000. (2.) Town in above prov., 220 m. N.N.E. of Zungeru; manufactures cotton cloths, Hausa gowns, and embroidered goods. Est. pop. 50,000.

Kanobin, vil. and monastery in Lebanon, Syria, 32 m. N.N.E. of Beyrouth; the seat of the Patriarch of the Maronites.

Kanowna, mining tn., Western Australia, 40 m. N.E. of Coolgardie. Pop. (5 m. radius) 12,500.

Kansas. (1.) Central state of U.S.A., organized as a territory in 1854, and admitted as a state in 1861. It lies between lat. 37° and 40°, and long. 94° 30' and 102°, and has an area of 82,158 sq. m. including 384 sq. m. of water. It forms a portion of the Great Plains, with a general rise from E. (750 ft.) to w. (4,000 ft.). A part of the E. boundary of the state is formed by the (navigable) Missouri R. Other streams are the Arkansas, the Kansas, and its branches the Smoky Hill and the Republican; but none of these are navigable. In the w. third of the state the rainfall (15 in. annually) is wholly inadequate in average years, and irrigation is necessary. Kansas is essentially an agricultural state. The crop of Indian corn is by far the largest and most valuable of the state; wheat ranges next in value; while flax, barley, rye, tobacco, potatoes, and fruit are also cultivated. Stock-raising is actively engaged in. The mineral products mined consist of bituminous coal, salt, lead, and zinc. There is also a large output of petroleum and natural gas. The principal industries are slaughtering and meat-packing, carried on mainly in Kansas City. Pop. (1910) 1,690,949. Settlement is very sparse in the w. Topeka is the capital. (2.)

River of U.S.A., formed by the junction of the Smoky Hill and Solomon Rrs. near the boundary between Saline and Dickinson cos., Kansas. It flows N.E. to Manhattan, thence E., and joins the Missouri at Kansas City. Length, following up the Smoky Hill fork, about 900 m.

Kansas City. (1.) City, Missouri, U.S.A., co. seat of Jackson co., on r. bk. of the Missouri R., at the mouth of the Kansas R., adjoining Kansas City, Kansas. It is an important railway centre, over 20 systems uniting here. The leading products of the industries are clothing, confectionery, flour, foundry and machine-shop products, and malt liquors. Meatpacking, printing, and publishing are among the chief industries. There is a large trade in grain and live-stock. Pop. (1910) 248,381. (2.) City, Kansas, U.S.A., co. seat of Wyandotte co., on the Missouri, at the mouth of the Kansas R. Next to Chicago, it has the largest stockyards and meat-packing houses in the country. There are also machine-shops, locomotive and automobile works, and soap factories. Pop. (1910) 82,331.

Kansas City Southern Railway, THE, was incorporated in 1900. The main line extends from Kansas City to Port Arthur in Texas, a distance of 777 miles, of which 11 miles consist of running powers. The branch lines together are about 46 miles in length. Of the total mileage only 5½ miles is double track. The length of the lines in the yards, terminals, and side tracks (sidings) is 339 miles.

On the 30th June, 1909, the company owned 208 locomotives, 89 passenger vehicles, 65 cabooses, and 7,598 freight vehicles. The capital liabilities at the same date amounted to 92,556,000 dollars. The gross earnings for the 12 months were 8,771,965 dollars, and the expenses, including

taxes, 5,672,335 dollars. Four per cent. dividend was paid on the preference stock for the twelve months to 30th June 1909.

Kan-su, prov. in N.W. China. Its area is 88,610 sq. m. (Williams), and it lies between lat. 32° 30' and 40° N., and long. 98° and 108° E. Traversed by different chains of the Nan-shan Mts., the province may be roughly divided into three parts:—(1.) The southern part, consisting of the valleys of the upper waters of the Wei R. of Shen-si and of the Kia-ling of Sze-chuen. (2.) The eastern half, an undulating plateau, over 4,000 ft. above the sea, and composed of loess, traversed by deep ravines, with corn fields and villages on the plateau. (3.) The part west of Lan-chau-fu, hemmed in between the mountains and the desert, and forming a tongue-like wedge through which runs the road to West and Central Asia. Opium, wheat, millet, beans, tobacco, sheep's and camels' wool, grapes, musk, dates, onions, and rhubarb are among the chief products. Lan-chau-fu is the capital. Si-ning, Kanthau, Liang-chau, Su-chau, and Ning-hsia are the chief cities. Pop. 10,600,000.

Kant, IMMANUEL (1724-1804), one of the greatest of philosophers, whose system indeed is the central fact in modern philosophy, was born at Königsberg on April 22, 1724. He believed himself to be of Scottish extraction, but doubt has been thrown upon this. His life was very uneventful. In his sixteenth year he entered the University of Königsberg, where he was taught the then dominant philosophy of the Wolffian school. After six years at the university, he spent the next ten as private tutor in several noble families of the province, and in 1755 returned to the university as lecturer. It was not, however, till fifteen years later (in 1770) that he was promoted to a

chair of philosophy. The only notable event of his later life was the conflict into which he was brought with the Prussian censorship by his (published) religious views, and as a result of which he for the time being submitted to be silenced.

It is usual to distinguish three periods in the development of Kant's thought—(1) The early period, in which he received and acquiesced in the current Leibniz-Wolffian type of philosophy; (2) a period of reaction, during the 'sixties, against this philosophy, in which he was influenced partly by the English empirical philosophy and ethics; and (3) finally the period in which he developed his own critical philosophy, and which may be said to begin with his inaugural dissertation as professor of philosophy in 1770, though it was not till eleven years after (in 1781) that he published his chief work, *The Critique of Pure Reason*, and his position in the meantime had undergone an important change.

The distinguishing feature of the critical philosophy is that it undertakes to investigate the faculty of reason or knowledge first of all, and to determine its limits before entering upon the work of systematic construction. Through the neglect of this preliminary investigation, a dogmatic philosophy of the Leibniz-Wolffian type essayed problems beyond the power of reason, and the result of such over-confident attempts is but to produce by their failures an equally extreme scepticism. The fundamental result of the critical philosophy, on the other hand, is to establish a thorough-going distinction between the sphere of phenomena which are accessible to human knowledge, and that of *noumena*, or things-in-themselves, about which we can have no knowledge

(strictly so called), not even that they exist. Kant accordingly rejects the old rational psychology, rational cosmology, and rational theology, all of which professed to attain a knowledge of super-phenomenal realities—viz. of the soul as an immortal substance, of the world as a finite or infinite whole, or finally of God as a perfect Being, Architect, and Creator of the world. But while a duly self-critical reason is compelled to resign its pretensions to deal with these high themes, its self-denial is not without reward. If, when it pretended to an unreal knowledge, it laid itself open to sceptical attacks, now, when it confines itself to the sphere of phenomena, it can establish the universal validity of its laws, and therefore the equal validity of the sciences based upon them. For phenomena, since they do not exist in themselves, but only in relation to mind, must conform to the laws of the mind's structure. And in the constructive part of his great work Kant exhibits by analysis the necessity of these essential laws of mind—first, the 'forms' of space and time, or fundamental truths of spatial and temporal relation, upon which the mathematical sciences depend; and second, the fundamental laws, such as that of causality, upon which the physical sciences depend. It was indeed one of Kant's main philosophical interests to explain and defend the high scientific claims of mathematical and physical knowledge against the questionings to which these were subjected by an empirical philosophy.

But the vindication of science was not the only fruit of reason's self-denial. A no less valuable benefit was the vindication of morality, and that religious faith which rests upon it. This religious faith depends upon the absolute validity of the moral

law, and Kant sought no less strenuously to establish in his ethical works (*Groundwork of the Metaphysic of Ethics*, and *Critique of Practical Reason*) the claims of a high and austere morality than he had formerly asserted the claims of science in his *Critique of Pure Reason*. The only thing good without qualification is the good will—i.e. the will that gives itself in free submission to the moral law; and the moral law, which is reason's own law self-imposed, has but the one supreme commandment—to eliminate from our action every subjective or selfish motive, to follow no rule of action which we cannot will to be universally obeyed. Only a being who is free, able to rise above the pressure of motive and desire, can so will and act. Consequently we must postulate freedom of the will for man on the ground of his moral consciousness. ‘I ought, therefore I can.’ Now if science, which brings all its objects under the inexorable law of causal necessity, were indeed an account of things-in-themselves, freedom would be impossible. But science tells us only of phenomena, while man—who as a moral being is no mere phenomenon or part of nature, but a free agent in whom reason itself becomes practical—belongs with his moral consciousness to the higher noumenal world. Hence the same self-denial of reason, which sets strict bounds to knowledge, and opens to faith the higher world of morality and religion. In the later *Critique of Judgment* Kant goes some way towards reconciling the dualism of the two other critiques, but the fuller development of his suggestions was left for his idealistic successors.

The chief works of Kant above referred to are translated: *The Critique of Pure Reason* by Max Müller (1881) and by Meiklejohn

(1852); the ethical works by Abbot —*Kant's Theory of Ethics* (1873); the *Critique of Judgment* by Bernard (1892). An edition of Kant's *Gesammelte Schriften* was published by the Prussian Academy of Sciences (1902, etc.). The fullest English account of Kant's philosophy is Caird's *Critical Philosophy* (2 vols.); a more compendious view is given in R. Adamson's *Philosophy of Kant* (1879); while the life of Kant is related in Wallace's *Kant* (1882, Philos. Classics); but perhaps the best general work is Paulsen's *Immanuel Kant, sein Leben und seine Lehre* (1898; Eng. trans. 1902). See also Mahaffy's *Kant's Critical Philosophy for English Readers* (1872–4), and Watson's *Kant and his English Critics* (1881), and *The Philosophy of Kant Explained* (1908).

Kantemir, ANTIOKH. See CANTEMIR.

Kanturk, m.rkt. tn., co. Cork, Ireland, 30 m. N.W. of Cork. Pop. 1,800.

Kaobang. See CAO-BANG.

Kaolin, or CHINA CLAY, is a hydrated aluminium silicate, and is a fine, almost impalpable powder of pure white colour, very soft, and slightly greasy to the touch; h. = 1, sp. gr. 2·2. It absorbs moisture readily, and when wet is plastic, so that it can be moulded in the solid. The chief source of kaolin is decomposed granite, the felspars of which are broken down under the action of carbonic acid gas which removes some of the potash and silica. $\text{Al}_2\text{O}_3 \cdot \text{K}_2\text{O} \cdot 2(3\text{SiO}_2) + \text{H}_2\text{O} + \text{CO}_2$ (Orthoclase) = $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O} + 4\text{SiO}_2 + \text{K}_2\text{O} \cdot \text{CO}_3$ (Kaolin). After being suspended in water, it is allowed to settle in shallow ponds, is then dug out in rectangular lumps, and dried over hot flues. It is used in the manufacture of porcelain and pottery (along with felspar, flint, and other substances), and

in the preparation of sizes for smooth-faced printing-paper, such as is largely employed for illustrated books with process engravings. It is also used for sizing and loading cheap cotton goods. Much alum is prepared from kaolin by the action of strong sulphuric acid. Artificial ultramarine, copying-ink pencils, and many paints and water colours also contain kaolin. Being cheap, it serves largely also as an adulterant of farinaceous foods, dusting powders, and various other substances. The chief sources of kaolin are Cornwall (where the china-clay industry is important), Saxony, Limoges in France, and Thuringia in Germany. It is found also in China, Australia, the E. Indies, and the United States. See *Univ. Mag.*, Nov. 1908.

Kapella, NOVA, tn., Hungary, in Slavonia, 12 m. E. by S. of Nova Gradisca. Pop. 10,000.

Kapila, founder of the Sankhya system of Hindu philosophy, and reputed author of the *Sankhya-sutras*. When he lived is quite uncertain. For the tenets of his philosophy, see SANKHYA.

Kaposvar, chief tn. of co. Somogy, Hungary, 100 m. S.W. of Budapest; exports tobacco and wine. Pop. 18,000.

Kappel. See CAPPEL.

Kaproncza (Ger. *Kopreinitz*), tn., Hungary, co. Belovar-Körös (Slavonia), 57 m. by rail, N.E. of Agram. Pop. 7,000.

Kapunda, tn. in Light co., S. Australia, 48 m. by rail N.N.E. of Adelaide. It was formerly noted for its copper mines, and is the centre of a wheat-growing district. Pop. 2,000.

Kapurthala, feudatory state, Punjab, India, with an area of 630 sq. m., and pop. of 315,000. The products include cotton, sugar, wheat, and tobacco. Kapurthala, the chief town, is 65 m. E. of Lahore. Pop. 18,500.

Kara. (1.) Mining dist., S.E. Siberia, on a trib. of the Shilka, 300 m. E. of Chita. Its gold mines belong to the Czar. (2.) Sea, Russia. See KARA SEA.

Kara-Balgassun. See KARA-KORUM.

Karachev, tn., Central Russia, gov. Orel, 50 m. W. by N. of Orel city. There are manufactures of rope and oil. Pop. 16,000.

Karachi, or KURRACHEE, munic. tn. and cantonment, cap. of Sindh, Bombay Presidency, India, on the delta of the Indus, 12 m. from the river's most westerly outlet, and 90 m. S.W. of Hyderabad. It is the terminus of railways which tap the Punjab and Rajputana, and has an excellent harbour, covering 237 ac. and protected by breakwaters. There are hot springs at Pir Mangha, 6 m. to the N. Karachi has an active inland trade with Kashmir, Afghanistan, Turkestan, and Tibet. Carpets, cotton, silk, and silverware are manufactured. The exports include hides, tallow, oil, cotton, wheat, and tea. The total trade reaches annually a value of some £15,000,000. Pop. 120,000. See Ballie's *Kurrachee, Past, Present, and Future* (1896).

Karad, tn., Bombay Pres., India, 88 m. S.S.E. of Poona. Pop. 12,250.

Karadagh, or KARATAG, tn., Bokhara, 100 m. S.E. of Samarkand. Est. pop. 5,000. The place was destroyed by earthquakes in October 1907.

Karaferia. See VERIA.

Karafuto, the Japanese name for the isl. of Sakhalien.

Kara-George, or KARAJORJ. See CZERNY, GEORGE.

Kara-Hissar, tn., Anatolia. See AFIUM-KARA-HISSAR.

Karaites, a Jewish sect who adhere to the strict letter of Scripture, and reject oral tradition and deprecate the Talmud. The schism arose at Bagdad about

the middle of the 8th century A.D., under the leadership of Anan ben David. He led his adherents to Jerusalem, whence they were scattered at the time of the crusades. They are most numerous in S. Russia, especially the Crimea.

Kara-Kalpaks (*i.e.* 'Black Caps'), a Turkish tribe which forms a racial and geographical transition between Kirghiz to N. and Turkomans or Turcomans to S. They dwell chiefly in the Lower Oxus valley, especially in the Khiva region, where they perhaps number 125,000.

Karakol. See PREJEVALSK.

Karakoram Mts., a range of Central Asia, between E. (Chinese) Turkestan on the N. and India on the s.; connects the N.W. angle of the Tibetan plateau with the S.E. corner of the Pamir, and divides the basin of the Tarim from that of the Indus. It is separated from the Himalaya by a long depression (Panggong-Shayok-Indus). Its length is nearly 450 m. The pass of Karakoram, in lat. $35^{\circ} 53' N.$, and long. $80^{\circ} 18' E.$, is the principal commercial route connecting India and E. Turkestan. In the central portion of the range is Godwin-Austen (K²), the second (or third) highest peak in the world (28,278 ft.). Close by are other peaks, all over 25,300 ft., as well as the vast Baltoro glacier. Towards the W. end of the chain, in the Gilgit region, the Karakoram system culminates in Rakapushi, over 25,200 ft. See Sir W. M. Conway's *Climbing and Exploration in the Karakoram Himalayas* (1894).

Karakorum, properly KARA-KUREN ('of the Mongols'), HOLIN, and HOLA-HO-LIN ('of the Chinese'), the ancient capital of the (Turkish) Uigur empire 7th-9th centuries A.D. (Kara-Balgassun), and of the Mongol empire in the middle of the 13th century, forms a vast extent of ruins in the val-

ley of the Orkhon (N. Mongolia), principally grouped around two sites—(1) the Uigur capital, close to l. bk. of Orkhon, in $47^{\circ} 26' N.$, and $102^{\circ} 35' E.$; and (2) the Mongol capital, founded by Ogodai Khan in 1234, nearly 15 m. s.E. of the former, near r. bk. of Orkhon. Heikel and Radlov in 1890 and 1891 explored the ruins and discovered very valuable (Turkish, Mongol, Persian, Tibetan, Chinese) historical inscriptions of the 8th century. See Campbell's 'Journeys in Mongolia' in *Geographical Journal*, vol. xx. (1903).

Kara-kul, GREAT, lake of Central Asia, in the N. Pamir, s. of the Trans-Alai range, at 12,400 ft. above the sea, in lat. $39^{\circ} N.$, and long. $73^{\circ} 25' E.$. It is 15 m. by $12\frac{1}{2}$ m., and its area is about 120 to 150 sq. m. It has a depth of 756 ft., and has no outlet.

Kara-kul, tn., Central Asia, 40 m. by rail s.w. of Bokhara.

Kara-kum. (1.) Sandy desert of W. Asia, stretches from the Ust-Urt plateau near the Caspian, s.E. to the Afghan frontier, and has the Amu Daria on the N.E., and the Kopet-dagh (Persian frontier) on the s.w. It surrounds the oasis of Merv, and has an area of about 110,000 sq. m. (2.) Or DESERT OF KHIVA, Turkestan, in the north of Syr-Daria prov., s. of the city of Khiva.

Karamania, or CARAMANIA, the central plateau of Asia Minor, between lat. $36^{\circ} 50' N.$ - $39^{\circ} 10' N.$, and long. $31^{\circ}-36^{\circ} E.$

Karangahake, tn., North Island, New Zealand, in Ohinemuri co., 25 m. from Thames. Gold is mined. Pop. 1,600.

Karamzin, NICOLAI MIKHAILOVITCH (1766-1826), Russian historian, was born near Simbirsk on the Volga. He made his reputation as a stylist with *Travels from Moscow* (Eng. trans., 3 vols. 1803), and in the same year he was appointed imperial historiog-

raper. Then, too, he began his great *History of Russia* (11 vols. 1816-29; 6th ed. 1850-3), which he continued till his death, bringing it down to 1813.

Karanja. (1.) Town, Berar, India, 36 m. s.s.w. of Amraoti; contains some ancient temples with striking carved woodwork. Pop. 16,500. (2.) Isl. in Bombay Harbour, India.

Kara Sea, Russia, a branch of the Arctic Ocean, 170 m. by 300 m. Yugor Strait between the mainland and the island of Waigatz, Kara Strait (30 m. wide) between Waigatz and Novaya Zemlya, and Matochkin Shar, which divides Novaya Zemlya into two parts, are the entrances from the w. It is open for navigation from July to September.

Karashahr, principal trading tn. of n. of E. or Chinese Turkestan, Central Asia, near N.W. shore of Baghrash-köl (40 m. by 15 m.). Pop. about 5,000.

Kara-su. See STRUMA.

Karasu-Bazar, tn. of the Crimea, S. Russia, gov. Taurida, 30 m. E.N.E. of Simpheropol; manufactures morocco leather goods, embroidery, etc. Pop. 13,000.

Karatchev, tn., Russia, gov. of and 50 m. W.N.W. of Orel. Pop. 15,000.

Karategin, dist. of Bokhara, Russian Central Asia, lying s. of Fergana; is drained to the s.w. by the Wakhsh or Surkh-ab, and includes an area of about 4,000 sq. m. Gold and salt are found. The chief town is Garm or Harm, on the r. bk. of the Wakhsh. Pop. about 75,000, chiefly Aryan Tajiks, but including also 15,000 Kirghiz.

Karauli, or KEBOWLI, feudalty state in Rajputana, India, having an area of 1,242 sq. m. The country is hilly and rich in timber. Pop. 160,000, employed in agriculture and cattle-breeding. Sheepskins, furs, goats, and rice are exported. The capital, Karauli, 55 m. s.w. of Bhartpur, is sur-

rounded by a sandstone wall. Pop. 24,000.

Karczag, tn., Hungary, co. Jasr-Nagykun-Szolnok, 37 m. s.w. of Debreczen. Pop. 21,000.

Karditsa, tn., Thessaly, Greece, 15 m. s.s.e. of Trikkala. Pop. 10,000.

Karelia, a region of Russia comprising the s.e. of Finland and parts of the governments of St. Petersburg, Olonets, and Archangel.

Karenni, plateau (3,000-4,000 ft.) between Lower Burma and Siam. The country is divided into several petty states under the control of the British authorities and has an area of about 3,150 sq. m. It is inhabited by the tribe of Red Karens, who number about 24,000.

Karens, a tribe of semi-aborigines on the e. frontier of Burma and the w. border of Siam, and in the Irawadi delta. Their prehistoric home seems to have been in S.W. China. They number about 727,000. See Wade's *Thesaurus of Karen Knowledge* (1847-50); Macmahon's *Karens of the Golden Chersonese* (1876); Smeaton's *The Loyal Karens of Burma* (1887).

Karikal, French settlement on Coromandel coast, Madras, India; has an area of 52 sq. m. Pop. over 70,000. The town and seaport of Karikal, 12 m. n. of Negapatam, exports rice, pottery, and ground-nuts. Pop. 17,000.

Kariot, or **NIKARIA**, the ancient Icaria, isl., Asiatic Turkey, one of the Sporades, 13 m. w. of Samos. Area, 103 sq. m. Pop. 13,000. Cap. Phanari.

Karli, renowned Chaitya cave temple, 25 m. s.e. of Bombay, India. It is cut in a rocky wall 800 ft. high, and is adorned with richly-carved columns.

Karlings. See CARLOVIN-GIANS.

Karlocza (Ger. *Karlowitz*), tn. and archiepisc. (Greek Oriental)

see of Slavonia, Hungary, co. Szerem, near the r. bk. of Danube, 45 m. by rail N.W. of Belgrade, famous for the treaty signed here in 1699 between the Turks on the one side and Austria, Poland, Russia, and Venice on the other. It makes very good wine and plum-brandy (*slivovitsa*). Pop. 6,000.

Karlov, tn., Bulgaria, in E. Rumelia, prov. of and 35 m. N. of Philippopolis. Pop. 8,000.

Karlowitz. See KARLOZZA.

Karlsbad, tn. and wat.-pl. of Bohemia, Austria, at the s. foot of the Erzgebirge, 70 m. w. by N. of Prague. The waters are warm (80° - 164° F.) and alkaline-saline in quality. The season is at its height in June and July. The little town is 1,225 ft. above sea-level. Porcelain, goldsmiths' work, liqueur, needles, and ornaments (out of the petrefactions of the mineral water) are made. The waters were first used for bathing about 1520. Pop. (1911) 17,446.

Karlsborg, fortress, Sweden, on the w. shore of Lake Vetter, 50 m. N. by E. of Jönköping.

Karlsburg, or GYULA-FEHÉRVÁR, fort. tn. and episc. see of Transylvania, Hungary, on the r. bk. of the Maros, 50 m. s. of Klausenburg. It produces wine, and has a fine Gothic cathedral (1443) containing the tomb of John Hunyady, its founder. Pop. 10,000.

Karishamn, seapt., Sweden, 30 m. w. of Karlskrona. It has a fortified harbour and ship-building yard. Pop. (1911) 7,209.

Karlskoga, vil., Sweden, 25 m. N.W. of Örebo; has iron works. Pop. (1911) 15,868.

Karlskrona, fort. seapt., on rocky isl. off s. coast of Sweden, cap. of gov. of same name, 47 m. s.s.w. of Kalmar. It has ship-building yards, an arsenal, naval school, and hospital, and tobacco, shoe, and cloth factories, saw and flour mills, foundries and

shipbuilding yards. The chief exports are granite, fish, paper, and wood. Since 1680 it has been the chief station of the Swedish fleet. Pop. (1911) 27,448.

Karlsruhe, tn., Germany, cap. of grand-duchy of Baden, 34 m. by rail s.s.w. of Heidelberg, near the N. end of the Black Forest, 6 m. E. of the Rhine, on which it has its port of Maxau. In 1853 the grand-duke founded here an academy of art. This, with a picture gallery and the exhibition of the Karlsruhe Art Association, have given the place some importance in the art history of Germany. The polytechnic was the first (1826) of its kind in Germany. Of recent years Karlsruhe has become an industrial centre, producing railway engines and carriages, machinery, firearms and explosives, cigars, furniture, silver wares, leather, cement ware, beer, carpets, and perfumery. Pop. (1910) 133,953.

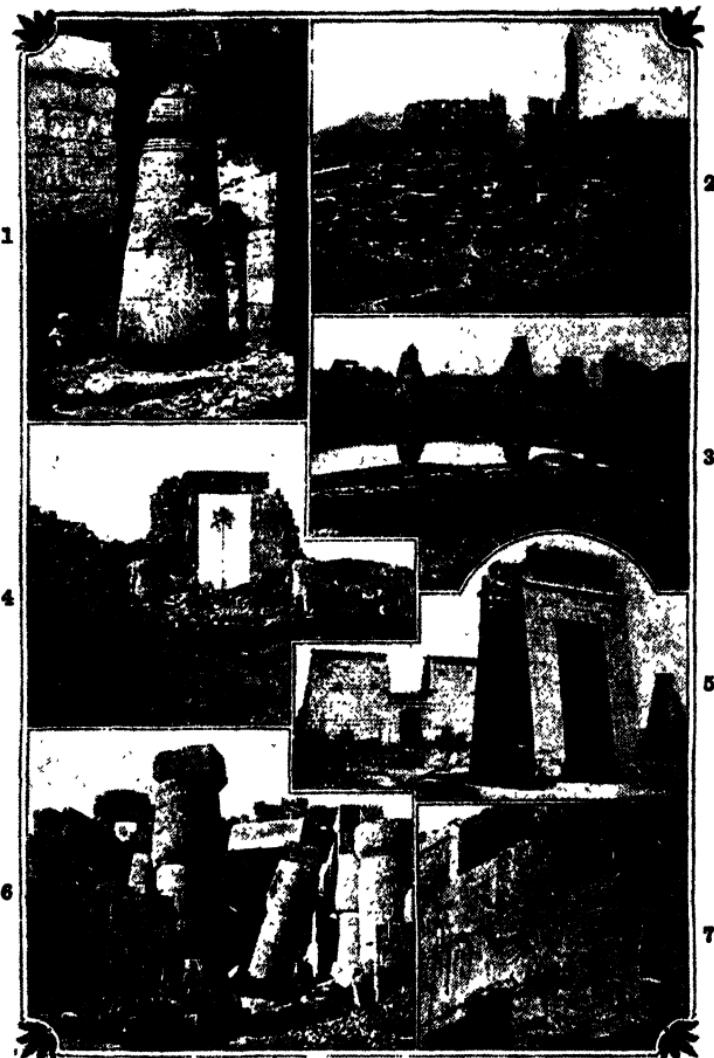
Karlstad, cap. and episc. see of Sweden, co. Värmland, on isl. of Thingvalla, at N. end of Lake Wener; manufactures machinery, tobacco, and matches. Its mineral water is exported. Here was signed, Sept. 23, 1905, the agreement dissolving the union of Norway and Sweden. Pop. (1911) 17,191.

Karlstadt, tn., Croatia. See KAROLYVAROS.

Karma. See BUDDHISM.

Karmo, isl., w. coast of Norway, co. Stavanger, opposite Bukn Fjord, 107 sq. m. in area; has herring fisheries, and yields copper. Pop. 12,000.

Karnak. The great temple of Karnak in Egypt is situated about one and a half miles N. of the modern village of Luxor, on the r. bk. of the Nile, in $25^{\circ} 50'$ N. lat. An avenue of krio-sphinxes leads up to the great gateway of Ptolemy Euergetes I. (247-222 B.C.), which opens on to the beautiful temple (recently excavated)



Ruins at Karnak.

1. Column in second court of Temple of Rameses III. 2. Great Temple from the south.
 2. General view of the ruins from the lake. 4. Temple of Amanhotep, with the colossal
 statues of Rameses. 5. Pylons at the Temple of Rameses II. 6. Hypostyle Hall. 7. Great
 Temple—genealogical tree.

of Chensu, dedicated by Ramses III. (20th dynasty). Slightly to the N.E. are the ruins of the main temple. The great propylaea leading from one court to another are of magnificent proportions, the total breadth of the largest being 370 ft., and its height 142 $\frac{1}{2}$ ft., while its depth is 60 ft. The processional hall is the largest of all. There is a central avenue of twelve columns 80 ft. high, with nine lines of smaller columns on either side—134 in all. The whole is carved and coloured. It was erected by Seti I. and finished by Ramses II. (19th dynasty). East of the hall is a court surrounded by Osiride figures in which are two red granite obelisks, one of them the second largest in the world; the other was erected by Queen Hatshepsu (18th dynasty). Other temples lying round the main building are those of Ptah and Hathor, of Amenhotep III., and of Horemheb.

Karnal, chief city, Karnal dist., Punjab, India, 7 m. from the r. bk. of the Jumna, and 70 m. N. by W. of Delhi. It manufactures cotton cloth, blankets, and boots. Pop. 24,000. The district has an area of 2,440 sq. m., and a population of nearly 900,000. The chief crops are rice, cotton, pulse, sugar-cane, millet, and wheat.

Karnatik, or CARNATIC, former political division of S. India, stretching 600 m. along the Coromandel coast, but now included in the governorship of Madras. During the 18th century it was the scene of the struggle for supremacy in India between Britain and France. It came under British administration in 1801.

Kärnthen. See CARINTHIA.

Karnul, or KURNOOL, cap. of Karnul dist., Madras, India, 88 m. N.E. of Bellary. Pop. 25,000. The district has an area of 7,514

sq. m., and population of 875,000. The staple crops are millet, rice, cotton, and oil-seed.

Karolinenthal, tn., Bohemia, Austria, a suburb of Prague, lying between the Moldau and Zizkaberg. Pop. (1911) 24,445.

Károlyi, ALOYS, COUNT (1825-89), Austrian statesman, of Hungarian birth; was sent in 1859 as Austrian minister to Prussia, where he conducted the Schleswig-Holstein negotiations, and negotiated the preliminaries for the treaty of Prague (1866). In 1878 he was appointed ambassador in London.

Károlyvaros (Ger. *Karlstadt*), tn., fortress, and episc. see, Hungary, in Croatia, co. of and 30 m. S.W. of Zagrab (Agram). Pop. 7,500.

Karonga, station on the N.W. shore of Lake Nyasa, British Central Africa, at E. extremity of the Stevenson Road.

Karori, suburb of Wellington, New Zealand. Pop. 2,200.

Karpathos, isl., Turkey in Asia, s.w. of Rhodes. Area, 150 sq. m. Pop. 9,000.

Karr, JEAN BAPTISTE ALPHONSE (1808-90), French novelist and journalist, born at Paris. His *Sous les Tilleuls* (1832), an autobiographical romance, full of originality, freshness, and fantastic humour, brought him fame, and was followed by *Une Heure trop tard* (1833); *Fa diez* (1834), which furnished Jules Sandeau and Emile Augier with the ideas for their comedy *La Pierre de Touche*; *Vendredi Soir* (1836); *Le Chemin le plus Court* (1836), containing autobiographical fragments; *Géneviève* (1838); *Feu Bressier* (1848); and *Fort en Thème* (1853), a plea for educational reform. Karr became editor of *Le Figaro* in 1839, and the same year started *Les Guêpes* (1839-79), a monthly satirical journal. After 1848 he devoted himself to horticulture.

His, *Voyage autour de mon Jardin* (1846), *Lettres Ecrites de mon Jardin* (1853), *Le Crûdo du Jardinier* (1875) are charming works on gardening. His reminiscences, *Livre de Bord*, were published in 1879-80.

Karroo, the table-lands which form successive terraces between the sea shore and the high veld of the interior of Cape of Good Hope. Est. area over 100,000 sq. m. The Little Karroo is the first terrace, its N. buttress being the Zwarteburg. Northward of the Zwarteburg is the Great Karroo (average width 60 m.), bounded on the N. by the Nieuwveld Mts. See H. A. Bryden's *Kloof and Karroo* (1889).

Kars. (1.) Russian prov. of s.w. Transcaucasia, ceded by Turkey in 1878. The country is elevated, being part of the Armenian plateau, some of the peaks reaching 10,000 ft. It is drained chiefly by the Kura. The climate is extreme. Agriculture and trade with Turkey are the chief occupations, though the Kurds are a pastoral people. Salt is obtained. Area, 7,250 sq. m. Pop. 350,000. (2.) Capital of above prov., 115 m. s.w. of Tiflis. The cathedral was built in the 11th century. Kars is strongly fortified, and has an ancient citadel. Kars was brilliantly defended by the Turks under the British general Williams for six months in 1855, but had finally to surrender to the Russians. It was again carried by storm by the Russians in 1877. Pop. 23,000.

Karsandas Mulji (1832-75), Indian journalist and social reformer, started the *Satya Prakash* (Light of Truth), a Gujarati newspaper, in which he advocated female education and the re-marriage of Hindu widows. He was administrator of the native state of Limri.

Karshi, tn. and oasis, Bokhara, Russian Central Asia, 100 m. s.e.

of Bokhara city. It produces tobacco. It was taken by the Russians in 1868. Pop. 25,000.

Karst, a name given to the limestone plateau which joins the E. Alps to the Dinaric Alps E. of Istria, but the term has been extended to include the whole of the porous limestone mountain system from the Laibach depression to the Morea (Greece). The surface contains many sinks or swallow-holes, called dolinas. Karst phenomena, with sinks, cañons, and caverns, are found wherever soluble limestone exists in regions which are not too dry. See Grund's *Karsthydrographie* (1904).

Kartarpur, tn., Jalandhardist, Punjab, India, 45 m. E. by S. of Amritsar; founded in 1588 by Guru Arjun, whose handsome residence and gardens are its chief features. Pop. 11,000.

Kartikeya, the Hindu god of war, was the second son of Siva. The month of Kartika, part of November and December, is held sacred to him by the Sivaites.

Karun, riv. of W. Persia, rises in the Bakhtiari Mts., flows w. and s. past Shuster and Ahwaz, and joins the Shat-el-Arab at Mohammerah, 45 m. from the Persian Gulf.

Karur, or CAROOR, munic. tn., Coimbatore dist., Madras, India, 45 m. w. by N. of Trichinopoly, and near the Cauvery. It was the capital of the ancient kingdom of Chera or E. Kerala. Pop. 12,000.

Karwar, or CARWAR, seapt. and cap. of dist. of N. Kanara, Bombay, India, 54 m. s.e. of Goa. Pop. 17,000.

Karwin, tn., crown-land of Silesia, Austria, 65 m. w.s.w. of Cracow, in a coal-mining region. Pop. (1911) 16,801.

Karyokinesis. See CELL.

Karyostos, seapt., Greece, near the s. end of the isl. of Eubœa; has marble quarries. Pop. 9,000.

Kasai. See KASSAI.

Kasanlik, or KAZANLIK, tn., E. Rumelia, Bulgaria; stands amidst rose gardens on the s. slope of the Balkans, 5 m. s. of the Shipka Pass, and yields attar (otto) of roses. Pop. 11,000.

Kasassin. See KASSASSIN.

Kasbin. See KAZVIN.

Kaschau (Hung. *Kassa*), a royal free city and episc. see, Hungary, cap. of the co. of Abauj-Torna, in the valley of the Hernad, 140 m. N.E. of Budapest. It manufactures tobacco, machinery, furniture, textiles. One of the chief national strongholds, it was captured by the Austrians in 1848. Pop. 40,000.

Kasganj, munic. tn., Etah dist., United Provinces, India, 60 m. s.w. of Bareilly. Pop. 20,000.

Kashan, tn., Kashan prov., Persia, 95 m. N.N.W. of Isphahan, and on route between Teheran and Isphahan. It manufactures silks, satins, brocades, copper ware, and carpets. Pop. 30,000.

Kashgar. (1.) Chief tn. of E. Turkestan, on the Kashgar-Daria or Kizil-su, one of the head-streams of the Tarim, nearly 100 m. N.W. of Yarkand. It is composed of two parts — the Kuhna-shahr, or old town, and the Yanghi-shahr, or new town, 5 m. E. on the other side of the Kashgar-Daria. The old town, built about 1513, is encircled with a high clay wall. The governor's palace and a caravanserai, both built by Yakub Beg (1864-77), are the chief buildings. Two miles to N. is the mosque of Hazrat Afak (d. 1693). The new town, built in or about 1838, is also fortified with massive clay walls. Its chief edifice is the palace of the *amban*, or Chinese governor. Adolph Schlagintweit, the European traveller, was murdered here (1857). Pop. 40,000 to 50,000. (2.) River of Central Asia, rises on the s. slope of Tian-Shan Mts., about 74° E. It joins the Yarkand after an easterly flow of 500 m.

Kashgar-Daria. See TABIM.

Kashgaria, a name used in the wider sense for Chinese Turkestan or Sin-kiang, and in the narrower sense for a district in its w. extremity, including a population of about 120,000 people.

Kashinath Trimbak Telang (1850-93), Indian scholar and educationist, was called to the Indian bar (1872); appointed member of the council at Bombay (1884), and judge of the High Court (1889). He warmly supported the Ilbert bill, and served on the Education Commission. He wrote *Was the Rāmāyana copied from Homer?* (1873); *Free Trade from an Indian Point of View*; and translated the *Bhagavad-gītā* into English for Max-Müller (1879).

Kashkar. See KUNAR.

Kashmir and Jammu, also CASHMERE, feudatory state of India; is bounded on the N. by the Karakoram Mts., on the E. by Tibet, on the s. and w. by Punjab and the N.W. Frontier Province. Area, 81,000 sq. m. Except at the extreme s. (Jammu), the country is very mountainous. The Indus is the chief river. The soil is fairly fertile. Rice, and other cereals, fruits, vines, and hops are cultivated. Besides shawl-weaving and silk-weaving, carpets, paper-mâché, woollen fabrics, silk embroideries, gold and silver ornaments, and copper-ware are manufactured. Coal is also mined. Kashmir enjoys a salubrious climate, varied and picturesque scenery, and a good supply of game. Thomas Moore, in his *Lalla Rookh*, praises its beauty. The capital is Srinagar. At one time *Nagas* (serpent-worshippers), the Kashmiris came under Buddhist influence about 245 B.C., and the subsequent corruption and decay of Buddhism paved the way for Hinduism. With the Mogul (Mongol) invasion the country passed into the possession of Afghans-

tan, and Mohammedanism became paramount, and is still the faith professed by the bulk of the population. In 1846, in return for his assistance, Golab Singh, chief of Jammu, was allowed by the British to purchase Kashmir, and received the title of Maharajah. The country is, to all intents and purposes, a 'buffer' state, though subject to British control. Pop. about 3,000,000. See Bellew's *Kashmir and Kashgar* (1875); Wakefield's *The Happy Valley, etc.* (1879); Eckenstein's *The Karakoram and Kashmir* (1896); Neve's *Picturesque Kashmir* (1900); M. C. Morison's *A Lonely Summer in Kashmir* (1904); Wardle's *Kashmir, its Silk Industries, etc.* (1905); *Kashmir*, by Sir F. Younghusband and Major E. Molyneaux (1909); and *Kashmir, the Land of Streams and Solitudes* (1908).

Kashubish, a Slav dialect, a branch of Wendish, spoken by nearly a quarter of a million of people in Pomerania. The name Kashubbenland is applied to the country between the Persante and the Vistula.

Kasimbazar, or COSSIMBAZAR, decayed tn., Bengal, India, 20 m. w.n.w. of Murshidabad, once the seat of one of the great emporiums of Bengal.

Kasimov, tn., Russia, gov. of and 70 m. n.e. of Ryazan, on l. bk. of the Oka. From 1452 till 1677 it was the capital of a Tartar principality. Pop. 14,000.

Kasipur, munic. tn., Tarai dist., United Provinces, India, 75 m. n.e. of Meerut. Identified as the former capital of the Govindana (Aryan) kingdom. Pop. 12,000.

Kasr-el-Kebir, tn., Morocco, 60 m. s. of Tangier. Oranges are largely grown, and wine is made. Here Sebastian of Portugal was defeated and slain (1578). Pop. 25,000.

Kassa. See KASCHAU.

Kassaba, or CASABA. (1.) Town, Asia Minor, vilayet of and 50 m. s.s.e. of Konieh. Pop. 15,000. (2.) Town, Asia Minor. 35 m. e. of Smyrna. Cotton and raw silk are exported. Pop. 23,000.

Kassai, riv. of Central Africa, one of the chief s. tributaries of the Congo, rises in Portuguese W. Africa, about 12° N. and 18° w., and flows E., then N., forming the boundary between Portuguese W. Africa and the Congo Free State for nearly 300 m. After a further course of over 500 m. to the N.W. and w.n.w. it is joined by the Kwango. Below the last-named river it is sometimes known as the Kwa. Length about 1,000 m. Wissmann explored it in 1885.

Kassala, fort. tn., cap. of prov. of same name, Anglo-Egyptian Sudan, on a tributary of the Atbara, 230 m. e. of Khartum; is regaining its importance as a trading centre (ivory, gold dust, hides), which it lost after the Mahdi's revolt. Pop. 20,000.

Kassan, tn., Fergana, Russian Central Asia, 50 m. n.e. of Kokan. Here is the Sadpir cemetery, with ancient monuments and inscriptions. Pop. 10,000.

Kassandra. See CASSANDRA.

Kassassin, lock on the canal between Zagazig and Ismailia, Egypt, and 23 m. w. of the latter. Here in 1882 Arabi Pasha was twice defeated by the British.

Kassel, tn. and cap. of Prussian prov. of Hesse-Nassau, on the Fulda, 124 m. by rail N.N.E. of Frankfort-on-the-Main. In Kassel lie buried Spohr, the musical composer, and Johannes von Müller. About 3 m. w. is the castle of Wilhelmshöhe. Here Napoleon III. was detained (1870-1) after the battle of Sedan, and here the Emperor William II. and his family frequently spend part of the summer. The industries include iron works, engineering shops, factories for railway car-

riages, and the manufacture of mathematical instruments, tobacco, small metal fittings, paper, and pianofortes. From 1806 to 1813 Kassel was the capital of the kingdom of Westphalia. Pop. (1910) 153,120.

Kastamuni. (1.) A vilayet of Turkey in Asia, to the s. of the Black Sea. Area, 19,570 sq. m.; pop. 960,000. (2.) Or KASTAMBUL, cap. of above vilayet, 76 m. w.s.w. by w. of Sinope; has manufactures of copper-ware, cotton goods, and leather, and trades in mohair, hemp, and hides. Pop. 17,000.

Kastel, tn., Hesse, Germany, on the right bank of the Rhine, opposite Mainz. Pop. (1910) 9,693.

Kastoria, or KESRIE, tn., Turkey, in Macedonia, vilayet of and 35 m. s. of Monastir. Pop. 8,000.

Kastrl. See DELPHI.

Kasur, munic. tn., Lahore dist., Punjab, India, 32 m. s.s.e. of Lahore. Its products are grain, cotton, and leather. Pop. 22,000.

Kasvin. See KAZVIN.

Katanga, or GARENGANZE, country, Belgian Congo, about 150 m. s.w. of Lake Moero; has copper, gold, iron and tin mines. Area, 180,000 sq. m.; pop. about 1,000,000.

Kater, HENRY (1777-1835), English physicist, born at Bristol; went (1799) to Madras, and did good service in trigonometrical surveying, but retired and devoted himself to science (1814). He proved the superiority of the Cassegrainian to the Gregorian telescope, invented the floating collimator, and determined the length of a seconds pendulum. He left writings on measures, balances, pendulums, and the Russian standards of length.

Katernberg, mining tn., Rhenish Prussia, near Essen. Pop. (1910) 17,165.

Katha, dist., Upper Burma, traversed by the Irawadi. Rice,

tea, cotton and sesamum are grown; gold, copper, iron, lead, jade, soapstone, and salt are found. Area, 6,894 sq. m. Pop. 180,000. Katha, cap. of the dist., is on the Irawadi, 50 m. w. of Bhamo.

Katharine. See CATHERINE.

Kathiawar, peninsula on w. coast of India, between Gulf of Cutch and Gulf of Cambay. It contains 187 feudatory states subject to Bombay. Cotton, the chief product, is exported. Area, 20,000 sq. m. Pop. 2,330,000. Off the s. coast is the Portuguese port of Diu.

Kathimein, or KADHIMEIN, tn., Asiatic Turkey, on the Tigris, 5 m. n.w. of Bagdad. It has two famous tombs, a Persian mosque, and is a place of pilgrimage for Persians. Pop. 15,000.

Kathode. See ANODE and ELECTROLYSIS.

Kathode Stream. See VACUUM TUBES.

Katkov, MIKHAIL NIKIFOROVITCH (1820-87), Russian journalist, was born at Moscow; became (1845) professor of philosophy at Moscow University. He founded (1856) the *Russki Viestnik*, to advocate reform; but, alarmed by an insurrection in Poland, he became the apostle of the Russification of the whole empire. Through this and the *Moscow Gazette*, which he acquired in 1863, he gained great influence throughout Russia. It was in his paper that Tolstoi's work first saw the light. See Liwoff's *Michel Katkoff* (in French, 1897).

Katmandu. See KHATMANDU.

Katoomba, tn., New South Wales, 55 m. w. by n. of Sydney. Pop. 2,300.

Katrine, LOCH, in Stirlingshire and Perthshire, Scotland, 5 m. n. of Loch Lomond. It lies 364 ft. above sea-level, and has a maximum depth of 490 ft. It is 8 m. long, with an average breadth of about a mile. It discharges through Lochs Achray and Ven-

nuchar to river Teith. Between the eastern end of the loch and Loch Achray lies the Trossachs. Since 1859 it has furnished Glasgow with most of its water supply. The surface was raised five feet in 1886, and as a result the 'Silver Strand,' immortalized in the *Lady of the Lake*, was submerged, and Ellen's Isle diminished in extent.

Katsura, PRINCE (1847), Japanese statesman, was born in prov. Choshiu. He studied military matters in Berlin, and from 1875-8 was military attaché at the Japanese embassy there. In 1886 he became vice-minister of the Japanese War Office, and helped to reform the army. He distinguished himself in the war between China and Japan, and was appointed war minister (1898) and prime minister (1901-6), and again (1908-11). He was made a prince in 1911.

Katta-Kurgan, tn., Turkestan, in Bokhara, 45 m. w.n.w. of Samarkand. Pop. 10,000.

Kattegat, or CATTEGAT, sound between Sweden and Denmark, connecting the Skager Rack (N. Sea), through the Sound, the Great and Little Belts, with the Baltic. Length, 150 m.; breadth, from 40 to 70 m.

Kattimundoo, or CATTIMANDOO, a juice obtained from the *Euphorbia Cattimandoo*, a plant which flourishes in the north of the Deccan, India. The juice is analogous to gutta-percha, and is employed as a cement. It is also used as a cure for rheumatism.

Kattowitz, tn., Prussian prov. of Silesia, 8 m. by rail s.e. of Beuthen, and near the Russian frontier; has iron and other metal works, and sawmills. There are coal and zinc mines in the vicinity. Pop. (1910) 43,170.

Katunga, tn., N. Nigeria, 35 m. n. of Ilorin; is an important trading centre. Pop. 15,000.

Katwijk, tn., seaside resort, and fishing vil. of the Netherlands, prov. S. Holland, on North Sea, close to the mouth of the Old Rhine, and 5 m. N.W. of Leyden. Pop. (1910) 10,417.

Katyayana, a Sanskrit grammarian who is said to have lived in the Deccan in the 3rd century B.C. He was the author of the *Vārtikas*, a commentary, or, as some think, a hostile criticism, of the *Sūtras*, or great grammar, of Pāṇini.

Katydid, a name applied to a group of American species of Locustidae (green grasshoppers) from the 'song' of the male, which has been syllabled as 'Katy-did, O-she-did, Katy-did-she-did.' Examples are *Microcentrum retinerve* and *Cyrtophylus ooncavus*.

Kaub. See CAUB.

Kaufbeuren, tn., Bavaria, 35 m. s. by w. of Augsburg; has manufactures of yarn, cotton, cloth, and machinery. Pop. (1910) 8,948.

Kauffmann, ANGELICA (1741-1807), painter, was born at Coire in Switzerland. After studying in Italy, she travelled, with a reputation already made, to England. Here she executed numerous portraits of leading personages, one of the best being the Princess of Brunswick and her child, and was elected one of the first members of the Royal Academy. She finally married Zucchi (1781), a Venetian painter, and spent her last twenty-five years at Rome. The popularity of her work has largely and justly declined. See *Life* by G. de Rossi (1810).

Kaufmann, CONSTANTINE PETROVITCH (1818-82), Russian general, was born near Ivangorod, in Russian Poland; distinguished himself at the siege of Kars (1855). Appointed governor-general of Turkestan (1867), he seized Samarkand (1868), and Khiva (1873).

Two years later he annexed Kokand to Russia.

Kaufmann Peak, highest point of the Trans-Alai range, Central Asia, and one of the loftiest (22,000 ft.) in the whole Tian-Shan system. It was named after Kaufmann, the Russian leader in the conquest of Central Asia.

Kaulbach, WILHELM VON (1805-74), German painter, was born at Arolsen, and becoming a pupil of Cornelius, he endeavoured to free fresco work from ecclesiastical convention by introducing mundane subjects. At Munich he decorated Duke Maximilian's palace with sixteen designs of Amor and Psyche; in 1834 he painted *The Battle of the Huns*; and in 1838 another colossal canvas, *The Destruction of Jerusalem*. In 1847 he became director of the Art Academy at Munich, and was then long engaged upon a series of six great frescoes for the vestibule of the new museum at Berlin. He also illustrated the works of Goethe and Shakespeare. See Hans Müller's *W. Kaulbach* (1892).

Kaulun. See KOWLOON.

Kaunitz, WENZEL ANTON, PRINCE VON (1711-94), Austrian statesman and diplomatist, born at Vienna; was appointed by Maria Theresa minister plenipotentiary to the governor of the Netherlands. As ambassador to France (1750), he negotiated the secret alliance between that country and Austria; afterwards became chancellor of state and chancellor of Italy and the Netherlands. He founded the Vienna Art School. See Life by Hormayr in *Der Oesterreichische Plutarch*, vol. vi., and by Beer (1872).

Kauri Pine (*Agathis australis*), a coniferous tree peculiar to New Zealand, and forming its most valuable tree. It attains a height of from 120 ft. to 180 ft., and a diameter of from 5 ft. to 12 ft.

The wood is straight-grained, easily worked, and susceptible of a high polish, and is largely exported for use as ships' masts, deck boards, furniture, and paving blocks. The tree yields a fine resin, kauri gum, used in varnishing.

Kava, or AVA, is a term applied both to a shrub, *Macropiper latifolium*, and to a drink prepared by Polynesians from its root. The shrub has a succulent stem, and large cordate leaves.

Kavala. See CAVALLA.

Kavanagh, JULIA (1824-77), Irish authoress, was born at Thurles in Tipperary. She is the authoress of *Madeleine* (1848), descriptive of life in Auvergne; *Natalie* (1850), which deals with Norman scenes; *Daisy Burns* (1853), which was translated into French; and *Addle* (1858).

Kavery. See CAUVERY.

Kavirondo, dist. of Uganda, British E. Africa, lying along the N.E. shore of Victoria Nyanza; is generally level, well watered, and fertile. The natives are of two types, Bantu and Negro; they are clever miners, smelters, and blacksmiths.

Kawagoe, tn., Hondo, Japan, 15 m. N.N.W. of Tokyo. Pop. 15,000.

Kawardha, feudatory state, India, in the Central Provinces; area 800 sq. m.; pop. 57,000.

Kawai, isl., New Zealand, in Gulf of Hauraki, 30 m. N. of Auckland; a health resort.

Kay (Fr. *Kei* or *Ke*), of the Arthurian legend, is King Arthur's foster-brother and seneschal, and is represented as a man of bitter and sarcastic tongue. In the *Brut*, after performing many deeds of prowess, he is slain in the war against the Romans. In the evolution of Arthurian legend Kay undergoes a change for the worse. In *Perceval le Gallois* he is represented as slaying Arthur's son, Lohot, and conspiring against

the king. In the romance of *Gawain and Kay* (preserved only in the Dutch *Lancelot*), he plots to drive Gawain from court. He is occasionally represented as uncle to the queen.

Kay, JOHN (fl. 1733-64), English inventor, was born at Walmersley, near Bury. He invented the extended lathe, the fly-shuttle (1733), and the card-making engine, which revolutionized the staple manufactures of England.

Kay, JOHN (1742-1826), Scottish painter and caricaturist, born near Dalkeith; was distinguished for his remarkable caricatures of Edinburgh celebrities and famous Scotsmen of his time. See *Kay's Portraits* (1837; 3rd ed. 1877), and Biographical Note prefixed to the *Portraits*.

Kayak, the long, narrow, decked skin canoe of the Eskimos. The *kayit* (*catoque*) of the Bosphorus and the *Yakut kayak* are the same word, although applied to vessels of wood, some of them seven tons burden. An average kayak measures: length, 17 ft. 9 $\frac{1}{2}$ in.; greatest breadth, 1 ft. 11 in.; greatest girth, 4 ft. 8 in.; weight, 60 lbs. The name *bidarka* is given to the kayak by the western Eskimos. Less frequent, and apparently not known among the eastern Eskimos, is the kayak with two separate manholes or holds to seat two paddlers, one behind the other.

Kaye, SIR JOHN WILLIAM (1814-76), English military historian, was born probably at Acton, Middlesex. He succeeded (1867) John Stuart Mill as secretary in the Political and Secret Department of the India office, and retired in 1874. In 1844 he had founded *The Calcutta Review*. His best known works are the *History of the Sepoy War* (1867-68), *History of the War in Afghanistan* (1851), and *History of the Administration of the East India Company* (1853).

Kayes, tn., French Upper Senegal and Niger Colony, W. Africa, on the l. bk. of the Senegal and at the head of navigation, 460 m. E.S.E. of St. Louis; is strongly fortified. It is the starting-point of a railway which extends eastwards 350 m. to Koulikoro on the Niger. Pop. 10,000.

Kay-Shuttleworth, SIR JAMES PHILLIPS (1804-77), founder of English popular education, and the system of school inspection by government, was born at Rochdale, Lancashire. A pamphlet which he published in 1832 on *The Moral and Physical Condition of the Working Classes Employed in the Cotton Manufacture in Manchester* led to the adoption by the local authority of measures tending to sanitary and educational reform. He also engaged in the Reform and Anti-Corn Law movements. In 1835 he was appointed assistant poor law commissioner, and four years later was transferred to the newly-created Education Department. He established at Battersea the first training college for teachers (1839-40).

Kazan. (1.) Government of E. Russia, bordered on the w. by Nijni Novgorod. Area, 24,000 sq. m. It belongs to the basins of the Volga and the Kama. The chief minerals are iron and copper. Forests cover about one-third of the total area, and there is a great export of wood, especially to Astrakhan and the steppe regions of the s. Pop. 2,600,000. This region was the old home of the Bulgarians. Kazan was conquered by Ivan the Terrible and annexed to Russia in 1552. (2.) Capital of above gov., stands 3 m. from the Volga, and 200 m. E. by s. of Nijni Novgorod. Its kremlin, or upper city, is surrounded by a stone wall. Its university is attended by some 2,800 students. The principal industries are tanneries,

breweries, and distilleries, leather and cloth works, iron and copper foundries, tallow, soap, candle, and sugar factories, and naphtha refineries. Kazan is a great river port, ranking next to Nijni Novgorod on the Volga. Pop. 144,000. See Turnerelli's *Kazan et ses habitants* (1841).

Kazanlik. See KASANLIK.

Kazbek, volcanic mt. (16,546 ft.) in the Caucasus, 25 m. s. of Vladikavkaz.

Kazembe, or CAZEMBE, vil. in N.W. of Rhodesia, near the s.e. point of Lake Moero.

Kazvin, or KASBIN, tn., Persia, cap. of prov. of same name, 90 m. w.n.w. of Teheran; manufactures cotton and ironware, and exports large quantities of raisins to Russia. Its breeds of camels and horses are celebrated. Pop. 35,000.

K.B., Knight Bachelor.

K.C., King's Counsel.

K.C.B., Knight Commander of the Bath.

K.C.H., Knight Commander of Order of Hanover.

K.C.I.E., Knight Commander of the Indian Empire.

K.C.M.G., Knight Commander of St. Michael and St. George.

K.C.S.I., Knight Commander of the Star of India.

K.C.V.O., Knight Commander of the Royal Victorian Order.

Kea. See NESTOR.

Keady, par. and tn., Ireland, in co. of and 7 m. s. by w. of Armagh. Linen is manufactured and bleached, and there are flax and corn mills. Pop. 5,500.

Kealakekua, bay on w. co. of isl. of Hawaii, N. Pacific. Here Captain Cook was killed by the natives in 1779.

Kean, CHARLES JOHN (?1811-68), English actor, second son of Edmund Kean, was born probably at Waterford; made his first appearance upon the stage at Drury Lane (1827). A visit to America (1830-3) was very successful. In 1850 he became a co-

lessee with Robert Keeley of the Princess's Theatre, London, and carried out a series of Shakespearean revivals until 1859. A tour round the world with his wife, Ellen Tree, was followed by a few performances in London in 1866. Charles Kean achieved great success in the rôles of Louis XI., Louis and Fabian del Franchi in *The Corsican Brothers*, and as Mephistopheles. See *Life*, by J. W. Cole (1859), and W. Marston's *Some Recollections of our Recent Actors* (1888).

Kean, EDMUND (1787-1833), English actor. His first great success was made in the part of Shylock at Drury Lane (Jan. 26, 1814). Richard III., Othello, and Lear were other triumphs; and he also played Hamlet and Macbeth with convincing power. The rival of Kemble, he drew immense crowds, and made the fortune of Drury Lane Theatre. At the close of his engagement there he toured in America (1820). After his return to England, however, the divorce case of Cox v. Kean (1825) told heavily against his personal reputation. English disapproval was echoed by America on his second tour (1826). His habits of heavy drinking weakened him physically and mentally, and eventually he collapsed at Covent Garden Theatre, in the middle of *Othello* (1833). See *Lives* by Barry Cornwall (1835), F. W. Hawkins (1869), and J. F. Molloy (1888).

Kane, AUGUSTUS HENRY (1833), ethnologist and geographer, born at Cork, Ireland. From 1882 to 1888 he was professor of Hindustani at University College, London, and vice-president of the Anthropological Institute (1883-88). He has translated and edited numerous geographical, philological, and archaeological works; and his writings include *Ethnology* (1896); *Man, Past and*

Present (2nd ed. 1899); *The Boer States* (1900); *The Gold of Ophir* (1901); and *The World's Peoples* (1908), etc.

Kearney, city, Nebraska, U.S.A., co. seat of Buffalo co., on Platte R., 180 m. w.s.w. of Omaha. Pop. (1910) 6,202.

Kearny, tn., Hudson co., New Jersey, U.S.A., on Passaic R., is a residential suburb of Newark. It has manufactures of mining machinery, floocloth, and metal goods. Pop. (1910) 18,659.

Kearsarge, first-class battleship of U.S.A., displacement 11,540 tons, launched in 1889. A former United States ship of this name sank the famous Confederate privateer *Alabama* off Cherbourg on June 19, 1864.

Kearsley, par. and tn., Lancashire, England, 4 m. s.e. of Bolton. The chief industries are coal-mining, iron-founding, brick and tile and paper making, and cotton-spinning. Pop. (1911) 9,676.

Keats, JOHN (1795-1821), English poet, born in London. In his brief life—a 'mature' career of some five years or so—this humbly born cockney boy became the first among all latter-day English poets as the poet of beauty—the foremost representative of that rarefied and controlled sensuousness which, rightly or wrongly, is considered pre-eminently Greek. Perhaps two-thirds of his poetry could be forfeited without serious loss to English literature. It is the superb remainder which gives him his greatness. In his first two books, the *Poems* of 1817 and *Endymion* of 1818, there is much that is immature in thought and style. Yet the latter volume contains the 'Hymn to Pan,' and the former the noble sonnet 'On First Looking into Chapman's Homer,' admittedly one of the finest sonnets in the language. The remainder alluded to consists of a few odes, the fragmentary

Hyperion, *Lamia*, *The Eve of St. Agnes*, a few sonnets, and one incomparable ballad. Than the odes to Autumn, to the Nightingale, on a Grecian Urn, and to Melancholy, it would be impossible to find anything nearer the unattainable of perfection. The influence of Keats upon later English poetry has been almost incalculable; to him, for example, Tennyson and Rossetti turned as to an inexhaustible well of beauty. The sculptor's sense of form, the painter's dream of colour, the musician's ecstasy in perfected sound, are all here. As to his brief life-record, see *Life, Letters, and Literary Remains of John Keats*, by R. Monckton Milnes (2 vols. 1848; and subsequent editions); *Life*, etc., by H. Buxton Forman (1883), and *Letters of John Keats to Fanny Brawne*, edited by same (1878); *Keats in the Men of Letters Series* (1887), by Sidney Colvin; and *The Severn Memoirs* (1892), compiled and edited by William Sharp.

Kebir. See KABIR.

Keble, JOHN (1792-1866), English divine and poet, was born at Fairford, Gloucestershire, and became fellow of Oriel (1811) and tutor (1818), and professor of poetry at Oxford (1831-41). *The Christian Year*, published anonymously in 1825, had been very gradually composed. In 1823 he returned to Fairford, to minister to poor parishes near Cirencester. It is from an assize sermon which he preached (1833) at Oxford, 'National Apostasy,' that Newman dates the start of the Tractarian movement. To the famous tracts Keble contributed four. In 1836 he accepted the living of Hursley, Hampshire. His interest in childhood is manifested in *Lyra Innocentium* (1846). This, though less popular than the *Christian Year*, is regarded by many as the finest fruit of his genius. Among his other contributions

to literature are his edition of *Hooker's Works* (1836); *Life of Bishop Wilson* (1863); a metrical version of the Psalms—*The Oxford Psalter* (1839). As a poet Keble is the spiritual successor of George Herbert; and like Herbert and Hooker, he was altogether without worldly ambition. Keble College, Oxford (opened 1869), was erected in honour of the poet's memory, and to perpetuate his teaching. See *Memoirs*, by J. F. Moor (1866); *Memoir*, by Sir J. D. Coleridge (1869); and *Life*, by Locke (1893).

Kebnekaisse, the loftiest mt. in Sweden, in Norrbotten, 45 m. w. of Kiruna. Alt. 7,000 ft.

Kecskemet, tn., Hungary, co. Pest, 65 m. by rail s.e. of Budapest, with corn and cattle markets, and production of wine, fruit, tobacco, and soap. Pop. 58,000.

Kedah, Malay state, stretches 120 m. along the w. coast of the Malay Peninsula, and covers an area of 3,000 sq. m. By the treaty of Bangkok, 1909, Kedah was ceded to Great Britain. The chief exports consist of tin, rubber, rice, guano, and jungle products. Pop. 220,000. Cap. Alor Star, 60 m. N. of Penang.

Kedarnath, mt., India, in Garhwal, about 65 m. E.N.E. of Dehra-Dun; has a famous temple and is a pilgrim resort. Alt. 22,850 ft.

Kedge, or **KEDGE ANCHOR**, a small anchor used to keep a ship, when moored, clear of her bow anchor, or for warping or 'keding' a ship from one part of a harbour to another, or in any narrow waterway.

Kedir', tn., Java, cap. of the residency of Kediri, 60 m. s.w. of Surabaya. Pop. 17,000.

Kedive. See **KHEDIVE**.

Keefer, JAMES EDWARD (1857-1900), American astronomer, was born at La Salle, Illinois; was appointed assistant to the Lick

trustees in 1886, and began spectroscopic work at the Lick observatory in 1888. His detection of the radial motions of nebulae took place in 1890. Succeeding Langley as director of the Allegheny observatory in 1891, he confirmed spectroscopically, in 1895, Clerk-Maxwell's meteoric theory of the constitution of Saturn's rings. He accepted the directorship of the Lick observatory in 1898. He wrote *Spectroscopic Observations of Nebulae* (1894).

Keeley, MARY ANN (?1805-99), née GOWARD, English actress, born in Ipswich. She first appeared in London at the Lyceum (1825). In 1829 she married Robert Keeley. Abandoning singing, she devoted herself to the drama; won success as Smike in *Nicholas Nickleby* in 1838, still greater success as Jack Sheppard (1839), and finally played Nerissa with Macready (1842). Undertaking the management of the Lyceum (1842), after a brilliant career she retired in 1859. See her *Reminiscences* (1900).

Keeley, ROBERT (1793-1869), English comedian, born in London. He made his début there (1818), and achieved success as Rumfit in Peake's *Duel* (1823), and in 1829 married Miss Goward, with whom he was constantly associated on the stage until her retirement in 1859. With Charles Keane he carried out a series of famous Shakespearean revivals at the London Princess's Theatre (1850-9). He retired finally in 1862.

Keelhauling, a punishment inflicted in the British navy during the 17th and 18th centuries. The offender was dragged from one side of the vessel to the other, beneath her keel, by means of ropes attached to the yardarms. The practice was frequently fatal.

Keeling or **Cocos ISLANDS**, group of about twenty atolls in

the Indian Ocean, 700 m. s.w. of Sumatra; annexed by Britain in 1857. The principal productions are copra and cocoanuts. In 1836 Darwin visited the islands, and, as the result of his observations there, propounded his theory of the formation of coral reefs by subsidence. See CORAL ISLANDS AND REEFS. Pop. 650.

Keene, city, New Hampshire, U.S.A., co. seat of Cheshire co., situated 42 m. w.s.w. of Concord. Manufactures wooden ware, furniture, woollen goods, boots and shoes. Granite and mica are found in the vicinity, and there is a large trade in lumber and maple sugar. Pop. (1910) 10,068.

Keene, CHARLES SAMUEL (1823-91), English humorous artist, was born at Hornsey, Middlesex. He began to draw for the *Illustrated London News* and *Punch* (1851). In 1864 he took Leech's place on *Punch*, and for twenty-five years contributed to its pages. He also illustrated Douglas Jerrold's *Curtain Lectures*. A collection of his drawings, entitled *Our People*, appeared in 1881. See G. S. Layard's *Life and Letters of Charles Keene of 'Punch'* (1892).

Keep. See CASTLE.

Keewatin, dist. of Canada, lying n. of Manitoba and n.w. of Ontario, and between Hudson Bay and Saskatchewan. It has a computed area of 516,570 sq. m. It abounds with game, is believed to have vast mineral deposits, and is well wooded. It is traversed by the Saskatchewan, Churchill, and Nelson rive. Pop. 10,000, including a few Eskimos.

Keffi, tn., N. Nigeria, 120 m. n.e. of Lokoja. Pop. 80,000.

Kehl, tn., grand-duchy of Baden, Germany, on r. bk. of Rhine, immediately opposite to Straasburg. Mostly rebuilt since 1870, it was made a river port in 1900. Pop. (1910) 8,860.

Kef or GREAT KEI RIVER. A river of Cape of Good Hope, formed by the union of the Black Kei from the w. and the White Kei from the n.w., flows s.e. to the Indian Ocean, 40 m. n.e. of East London.

Kei, Ke, or Key Islands, an archipelago in Dutch E. Indies, s.w. of New Guinea, consists of Great Kei, Little Kei, and smaller islands. Total area, 570 sq. m. Pop. 24,000. Principal products: bêche de mer, pepper, betel nuts, sago, palm oil, cocoanuts, and timber. The people are famous builders of native boats.

Keighley, munici. bor., W. Riding, Yorkshire, England, 17 m. w.n.w. of Leeds. It manufactures woollen stuffs, machinery, tools, and carries on iron-foundry. Pop. (1911) 43,490.

Keightley, THOMAS (1780-1872), Irish historian, born at Newtown, Co. Kildare. He is chiefly known (apart from his *Fairy Mythology*, which he published anonymously in 1828) by his various historical manuals. These include *Outlines of History* (1829); *The Mythology of Ancient Greece and Italy* (1831; 2nd enlarged ed. 1838); *History of England* (1837-9); *History of Greece* (1835); *History of Rome* (1836); *History of the Roman Empire* (1840); *History of India* (1846-7). He edited various of the Greek, Roman, and English classics, and wrote a *Life of Milton* (1855). His historical work was of some merit, though not of the importance he was apt to attach to it.

Keil, KARL FRIEDRICH (1807-88), German exegete, was born at Oelsnitz, Saxony; in 1833 became privat-docent at Dorpat, and in 1838 professor. After twenty years he retired to Leipzig, where he died. Keil was a very prolific writer, but his commentaries, once widely popular, are now out of

date. His principal works are *Einleitung to the O.T.* (3rd ed. 1873); *Biblische Archäologie* (1868-9); a long series of commentaries in alliance with Delitzsch (all trans. into English); and exegetical works on the Books of Maccabees, the four gospels, and the epistles of Peter, Jude, and to the Hebrews.

Keill, JOHN (1671-1721), Scottish mathematician and physicist, was born at Edinburgh. When David Gregory was appointed to the chair of astronomy in Oxford, Keill followed him, and became lecturer in experimental philosophy, and in 1712 was appointed to the Savilian chair of astronomy. His *Introductio ad Veram Astronomiam* (1718) gives a complete and orderly history of the science. A previous work, *Introductio ad Veram Physicam* (1701), was much praised abroad as an excellent stepping-stone to Newton's *Principia*.

Keim, THEODOR (1825-78), German New Testament critic, was born at Stuttgart, and became professor at Zürich, latterly at Giessen. His main title to fame rests on his *Geschichte Jesu von Nazara* (1867-72; trans. by Ransom, *Hist. of Jesus of Nazareth*, 1876-83).

Keith, bur., Banffshire, Scotland, 45 m. N.W. of Aberdeen; has distilleries, and manufactures tweeds, blankets, and agricultural implements. Pop. (1911) 4,499.

Keith. See MARISCHAL, EARL

Keith, GEORGE KEITH ELPHINSTONE, VISCOUNT (1746-1823), British admiral, born near Stirling. When in command of the *Warwick* (1778) he captured a Dutch ship of war of equal force, and in 1795 successfully reduced the Cape of Good Hope, and then captured a Dutch squadron in Saldanha Bay (1796). In 1800 he captured Genoa and Malta, and in 1801, having become an admiral, commanded the naval part

of the expedition to Egypt. See *Life by Allardyce* (1882); *Account of the Family of Keith*, by P. Buchan (1828).

Keith, JAMES FRANCIS EDWARD (1696-1758), known as Marshal Keith, second son of William, ninth Earl Marischal, was born at Inverugie Castle, near Peterhead, Scotland. In 1715 he took part in Mar's rebellion at Sheriffmuir, and again in the expedition which failed at Glenshiel (1719). Then escaping to the Continent, he served for nine years in the Spanish army, but in 1728 transferred his services to Russia. In 1747, however, he took service under Frederick the Great, who created him field-marshal, and under whom he served in the Seven Years' war, falling at Hochkirch (1758). See *Fragment of a Memoir written by Himself, 1714-34* (1789; reprint, 1843); Carlyle's *Frederick the Great*; Varnhagen von Ense's *Life*, in German (1844); and a shorter German *Life* by Paczynski-Tenczyn (1889).

Keith-Falconer, ION GRANT NEVILLE (1856-87), Arabic scholar, born at Edinburgh; studied at Cambridge, where he was for some years Hebrew lecturer, and in 1886 lord almoner's professor of Arabic. In 1885 he published a translation of the *Fables of Bidpai*. Keith-Falconer was, however, engrossed with the idea of mission work in a field where his knowledge of Arabic might be directly utilized, and in December 1886 he left England for Shaikh-Othman, a station some miles from Aden, where he died on 6th May following.

Kekewich, ROBERT GEORGE (1854), British soldier, famous for his gallant defence of Kimberley during the Boer war (Oct. 1899 to Feb. 1900), for which he was promoted major-general and given the c.b. Previous to the Boer war he served in the Malay Peninsula (1875-6), the Nile expedition

(1884-5), and the operations near Suakin (Dec. 1888).

Kekulé, FRIEDRICH AUGUST (1829-96), German chemist, was born at Darmstadt. He became lecturer at Heidelberg in 1856; professor of chemistry at Ghent in 1858, and at Bonn in 1867, where he remained till his death. Kekulé's work was almost entirely on organic chemistry, mainly centering on the constitution of carbon compounds, in particular of benzene; his theories in this respect were the foundation of the most far-reaching advances and discoveries. Kekulé was also a great teacher, and wrote an unfinished but model *Lehrbuch der organischen Chemie* (3 vols. 1861-7).

Kelantan. See KALANTAN.

Kelat. See KHELAT.

Kelland, PHILIP (1808-79), mathematician, born at Dunster, Somerset, was appointed professor of mathematics in Edinburgh University (1838). He wrote *Theory of Heat* (1837), *The Elements of Algebra* (new ed. 1860), *Lectures on the Principles of Demonstrative Mathematics* (1843), *Algebra* (1861), *Lessons on Physics* (1872), and *Introduction to Quaternions* (1873).

Kellaways Rock, a subdivision of the Oxford clay, is a calcareous sandstone, often very rich in fossils. It is best seen in Somerset, Northampton, and Yorkshire, being well exposed near Scarborough. It contains, among other fossils, *Cosmoceras Jason* and *Keplerites Calloviensis*.

Keller, GOTTFRIED (1819-90), Swiss novelist, born at Glattfelden, near Zürich. The success of a volume of *Gedichte* (1846) gave him a definitive bent towards literature, and in 1854 he published the novel *Der grüne Heinrich* (new and improved ed. 1879-80; 29th ed. 1903). Then came *Die Leute von Seldwyla* (1866; enlarged ed. 1873-4; 36th

ed. 1904), short tales of Zürich life. From 1861 to 1876 Keller was first secretary of the canton of Zürich. His later works were *Zürcher Novellen* (32nd ed. 1903), containing such excellent little stories as *Der Landvogt von Greifensee* and *Das Fähnlein der sieben Aufrechten*; *Das Sinngedicht* (28th ed. 1903), a novel; and *Martin Salander*, another novel (1886; 24th ed. 1903). His *Gesammelte Werke* appeared in 11 vols. (1889-1904). See Bächtold's *Kellers Leben* (1892-6), and K. Freiligrath-Kroeker's *Gottfried Keller, a Selection of his Tales* (1891).

Keller, HELEN ADAMS (1880), an American girl, who, in spite of being deaf, dumb, and blind, is remarkable for her intellectual accomplishments. She published *The Story of my Life* in 1903, and *The World I Live In* (1908). See L. W. Stern's *Helen Keller* (1905).

Kellermann, FRANÇOIS CHRISTOPHE, DUC DE VALMY (1735-1820), French general, born at Rothenburg, Bavaria. In 1792 his stubborn artillery defence of Valmy demoralized the Prussian invasion. Created marshal and Duc de Valmy by Napoleon, he commanded the Rhenish reserves (1809 and 1812). After Napoleon's return from Elba he sided with the Bourbons.

Kellgren, JOHAN HENRIK (1751-95), Swedish poet, born at Flöby in W. Gothland. Along with Lenngren he started at Stockholm (1778) *Stockholms Posten*, which speedily became the critical oracle of the capital. Gustavus III. made Kellgren his librarian (1780) and his private secretary (1785). His style is still regarded as classical, and his satires, especially *Mina Löjen*, are the best of their kind in Swedish literature. See *Samlade Skrifter* (1884-5).

Kells, tn., co. Meath, Ireland, 38 m. N.W. of Dublin. It has an old church tower (rebuilt 1578),

a round tower, St. Columba's house, and three or four crosses. Kells was an archiepiscopal see from 807; the see was joined with Meath in the 13th century. The Book of Kells, a copy of the gospels, now preserved in Trinity College, Dublin, is most elaborately and exquisitely ornamented. Pop. 2,400.

Kelly-Kenny, SIR THOMAS (1840). British soldier, commanded the 6th Division in the S. African war, and took part in the operations which resulted in Cronje's capture at Paardeberg. While still a lieutenant he served in the N. China campaign (1860), and was present at the action of Sinho and the taking of the Tangku and Taku forts. He also served in the Abyssinian war (1867-8). He was adjutant-general from 1901 until the abolition of the office in 1904. In 1905 he was promoted general, and retired in 1907.

Kelman, JOHN (1864). Scottish Presbyterian divine. Studied for ministry of the Free Church of Scotland. Became minister of Peterculter Church, Aberdeenshire, in 1891, and six years later, of New North Church, Edinburgh, where his cultured and essentially modern preaching exerted a remarkable influence over the students of Edinburgh University. In 1907 he became colleague of Dr. Alexander Whyte of St. George's United Free Church, Edinburgh. Dr. Kelman is the author of *The Faith of Robert Louis Stevenson* (1903), *The Holy Land*, and *From Damascus to Palmyra*.

Kelp is the ash obtained by burning seaweeds, that of most value being obtained from drift-weed, consisting of plants growing wholly below low tide, such as tangle (*Laminaria digitata* and *Laminaria stenophylla*). Although formerly it was the sodium carbonate that was most valued,

of recent years it has been the potash and the iodine contents that have been the most desired; but owing to the discovery of other and cheaper sources of these substances, kelp has largely lost its value even in these respects, and its production has greatly fallen off. The seaweed is burned in shallow pits, the salts left melting into a coherent slag. The product contains roughly about 14 per cent. of potassium sulphate, 17 per cent. of potassium chloride, 14 per cent. of sodium chloride, 4 per cent. of sodium carbonate—the balance being insoluble matter, moisture, and traces of other salts, including sodium iodide, from which from 10 to 12 lbs. of iodine to the ton of kelp is obtained, an amount that would be far greater were more pains taken in burning the seaweed.

Kelpie, a being in Scottish tradition, sometimes described as having the appearance of a man, and in that guise wooing maidens; at other times resembling a shaggy horse. It is associated with the sea and with rivers, other alternative names being 'tangie' and 'shelly-coat.' Hugh Miller's account of the river Conon kelpie, the water-spirit referred to in the *Heart of Midlothian* (ch. iv., footnote 1), and the Irish 'red man of the Boyne,' all represent a river genius who, on the approach of a person fated to be drowned in the river, arises out of the water and proclaims the victim's impending doom.

Kelsey Beds, estuarine or marine gravels, which are seen at Kelsey, near Hull, in England, and contain marine shells and mammalian bones. They are glacial, or more probably interglacial, in age.

Kelso, bur. in Roxburghshire, Scotland, 42 m. s.e. of Edinburgh, at the junction of the

Tweed and the Teviot. The former is crossed by a fine bridge of five arches, erected by Rennie in 1803. Sir Walter Scott and the Ballantynes were school-fellows at the old grammar school adjoining the abbey, and Horatius Bonar, the hymn-writer, was minister for thirty years in the Free church. The main industries are coachbuilding, agricultural machinery making, and fishing-tackle making. The abbey, Early Pointed Gothic and Norman, founded by David I. in 1128, is now a ruin. Pop. (1911) 3,982.

Keit. See SALMON.

Keits. See CELTS.

Keity, mining tn., Fifeshire, Scotland, 5 m. N.N.E. of Dunfermline. Pop. 4,000.

Keiung, seapt., Formosa (Taiwan), Japan, on N.E. coast; is connected by rail with Taiwan-fu. The French bombarded it in 1884, but the old fortifications have been restored and improved. Camphor, tea, rice, sugar, and coal are exported. Pop. 10,000.

Kelvin, WILLIAM THOMSON, LORD (1824-1907), was born at Belfast. After graduating as second wrangler and first Smith's prizeman at Cambridge (1845), he was appointed (1846) to the chair of natural philosophy in Glasgow University, a post he retained till 1899. His research work includes all branches of mathematical and practical physics. His principal work, however, was probably in the field of electricity and magnetism, the first fruit of which appeared in the paper he published in 1845 on the laws of electrostatics, and which was greatly developed in his researches on electrodynamics and submarine telegraphy. These theoretical investigations he applied to the Atlantic and other cables from 1857 to 1879, and used in his invention of innumerable instruments of the highest precision for the use both of the

investigator and of the practical man. He also took much interest in navigation, and in this connection invented an improved form of mariner's compass and an invaluable sounding-machine, besides working out methods for compass correction and for the investigation of tidal phenomena. In addition to three series of monographs—viz. (1) *Electrostatics and Magnetism* (ed. 1884), (2) *Mathematical and Physical Papers* (1882-4), and (3) *Popular Addresses*—he wrote *Baltimore Lectures on Molecular Dynamics and Wave Theory of Light* (1904), and, in collaboration with Prof. P. G. Tait, a *Treatise on Natural Philosophy* (1879-83). He was given a peerage in 1892. See Fitzgerald's *Lord Kelvin* (1899), and *Life* by Silvanus P. Thompson (1910).

Kelvin's Replenisher. See ELECTROSTATIC MACHINES.

Kemach, tn., Turkey in Asia, 125 m. w.s.w. of Erzerum. Pop. 14,000.

Kemble, ADELAIDE (?1814-79), English singer and author, daughter of Charles Kemble; born in London. She sang in grand-opera in Germany and at Paris (1837-8), and at Covent Garden, London (1841-2). The best known of her graceful writings is *A Week in a French Country House* (1867).

Kemble, CHARLES (1775-1854), British actor, youngest brother of John Philip Kemble and Mrs. Siddons, was born at Brecon in Wales. He joined his famous brother at Drury Lane (1794), playing secondary parts. Charles's chief laurels were won in comedy.

Kemble, FRANCES ANNE (1809-93), English actress and writer, known as Fanny Kemble, daughter of Charles Kemble, was born in London, and reluctantly joined the stage (1829), when her Juliet at Covent Garden proved an extraordinary success. While

acting in America (1832-4) she married Pierce Butler, a Georgian planter; and except for brief appearances on the stage and as Shakespearean reader, she lived subsequently in retirement. She published poems, two plays, and six autobiographical works, the best known of which are *Records of a Girlhood* (1878), *Records of a Later Life* (1882), and *Further Records, 1848-83* (1890). See *Letters of Edward Fitzgerald to Fanny Kemble* (1895).

Kemble, JOHN MITCHELL (1807-57), English philologist and historian, son of Charles Kemble, born in London. He published the *Poem of Beowulf* (1837) with translation, notes, etc.; *Codex Diplomaticus Evi Saxonici* (1839-48), containing some 1,400 early English documents; *A History of the Saxons in England* (1849); the *Gospel of St. Matthew in Anglo-Saxon and Northumbrian* (1856); and *Hore Ferales* (post., 1863). He was also licenser of plays.

Kemble, JOHN PHILIP (1757-1823), English actor, was born at Prescott, Lancashire. He first played at Wolverhampton (1776), afterwards appearing at York and Dublin. In 1783 he surprised London by his novel and powerful performance of *Hamlet* at Drury Lane; after which he played leading tragic rôles (Macbeth, Coriolanus, Cato, Othello) for some years, with rapidly increasing reputation. He became manager of Drury Lane (1788-1802), and from 1803-8 manager and part owner of Covent Garden Theatre, when he ranked as England's greatest living tragic actor, as his sister, Mrs. Siddons, was the greatest actress. The O.P. ('Old Prices') riots occurred in 1809, in consequence of his having raised the admission rates to Covent Garden (rebuilt); but he speedily overcame his unpopularity by the magnificent acting

of his riper years. He retired from the stage in 1817. See *Memoirs by Boaden* (1825), and Fitzgerald's *Account of the Kemble Family* (1871).

Kemp, GEORGE MEIKLE (1795-1844), Scottish architect, born at Moorfoot, Peebles. His best-known work is the Scott Monument in Edinburgh (1838). Kemp was drowned in the canal at Edinburgh before the completion of the monument. See *Biog. Sketch by Bonnar* (1892).

Kempen, (1.) Tn., Rhine prov., Prussia, 7 m. N.W. of Krefeld; has manufactures of silk, glass, electrical plant, and velvet. It was the birthplace of Thomas a Kempis (1379). Pop. (1910) 7,375. (2.) Tn., Prussia, in Posen, 43 m. E.N.E. of Breslau; manufactures tobacco, etc. Pop. (1910) 6,396.

Kempenfelt, RICHARD (1718-82), British rear-admiral. He fought in Pocock's actions with D'Aché off Cuddalore, Negapatam, and Pondicherry in India (1758 and 1759). In 1782 he perished on board the *Royal George*, which capsized off Spithead. He invented a system of signalling, which was adopted and improved by Lord Howe.

Kempis, THOMAS A (c. 1379-1471), religious writer, was born at Kempen, N.W. of Düsseldorf, in the diocese of Cologne. When twelve years of age he became a pupil of the 'Brotherhood of the Common Life' at Deventer, and came under the tuition of Florentius Radewijus, whose biography—that of a revered master—he afterwards wrote. Leaving the school of the 'Brotherhood', he spent five years (1400-5) in the Augustinian house of Mt. St. Agnes, near Zwolle, in the Netherlands, of which his elder brother was prior. There, too, after a year of probation, he assumed the monastic dress (1406), and in 1413 was ordained priest. At Mt. St. Agnes he lived tranquilly till his death.

Once he had occasion to travel to Windesheim, and in 1429 he, with the rest of the brethren, retired to Lunekerke, whence in 1431 he hastened to a convent near Arnheim, and there, for fourteen months, tenderly nursed his dying brother. Altogether his absences might amount to about three years out of seventy-two. Sub-prior (1425), a short time bursar, and again sub-prior (1448-71), he loved the quiet round of copying good books, writing tracts, and teaching novices, supplemented by solitary meditation. Besides the *Imitation*, Thomas is author of *Meditations on Christ's Life*, *The Soul's Soliloquy*, *Garden of Roses*, *Valley of Lilies*, Lives, Tracts, Sermons, Letters, and Hymns. He further wrote in a beautiful hand the Bible in 4 vols., a Mass book, the principal works of St. Bernard, and copies of his own works.

The influence of the spiritual and contemplative life of the Brotherhood is seen throughout his writings. It was a community spontaneously formed by Groot and Radewijus in the interest of the inner life of Christianity as distinguished from rigid scholasticism. In 1386 they founded the monastery of Windesheim, which within thirty years gave origin to forty-five similar convents. They took part in the work of the grammar schools at Deventer, and planted other schools—the one at Herzogenbusch having 1,200 pupils, and that at Zwolle having nearly 1,000.

The *Imitation* is a ripe product and interpretation of the life of the Brotherhood. In its own straitened, painful way the book yet reaches down, below all superficial distinctions, to catholic humanity. Thomas derives all good from love; all evil from want of love. He also draws a very broad distinction between (external) knowledge

and (inward) wisdom. He is far from disparaging books. 'A priest without holy books is like a soldier without arms, a bird without wings, a writer without pens.' The key to the right interpretation of anything is uprightness of heart. 'Were thy heart right, then were unto thee every creature a mirror of life and a book of holy doctrine.' The indispensable condition to book-learning is to be up to that level. 'To know the whole Bible by heart and the sayings of all philosophers avails naught without the love of God in the heart, in relation to which alone has anything any meaning.' The *Imitation* has thus appealed to the hearts of men so far apart from one another as Luther, Johnson, Leibniz, Lamartine, General Gordon, Comte, George Eliot, who have found in it a common meeting ground. Classical in substance, the book has also beauty of form, simplicity, transparency, repose, brevity, and rhythm. There is still a controversy as to the authorship of the *Imitation*, but the balance of opinion is in favour of Thomas. The book has gone through many thousands of editions, and has been translated into every civilized language and many barbarous dialects. The existing MSS. are counted at 400; six (all of the 15th century) are in the British Museum. The most ancient perfect MS. in Thomas's own hand is in the Bourgogne Library at Brussels; it is dated 1441. The Life of Thomas is given in the Nürnberg edition of his works (194); also by Heribertus Rosweide (1616). There is an edition of his collected works by Sommarius (1759). Among the many English translations are the first rhythmic one (1889), Dean Stanhope's (1865), Bishop Goodwin's (1868), Benham's (1874), and C. Bigg's (1898). See also Bibli-

ography in Wolfsgruber's *Gerson* (1880), *Life* by Brewer (1676) and by Butler (1814), and Montmorency's *Thomas à Kempis: His Age and Book* (1906).

Kempsey, chief tn., Macleay dist., on Macleay R., 280 m. N.E. of Sydney, New South Wales. Pop. 2,300.

Kempston, urb. dist., par., and vil., England, in co. of and 2 m. s.w. of Bedford. Pillow lace is made. Pop. (1911) 5,351.

Kempten, tn., Bavaria, in Swabia, on the Iller, 81 m. by rail s.w. of Munich. Cottons, woollens, paper, wooden wares, machinery, and hosiery are manufactured. The abbey was founded in 773; the abbot in 1360 was made a prince of the empire. Here in 1796 the French defeated the Austrians. It is identified with the Roman *Cambodunum*. Pop. (1910) 21,001.

Kempton Park, Middlesex, England, 4 m. w. of Kingston-on-Thames. The greater part of the park has been converted into a racecourse. See RACE MEETINGS.

Kemptown, vil., Colchester co., Nova Scotia, 15 m. N.E. of Truro. Pop. 1,600.

Kemptville, vil., Grenville co., Ontario, Canada, 30 m. s. of Ottawa. Pop. 1,600.

Ken, riv., N. India, in Bundelkhand, flows N.E. and joins the Jumna after a course of 250 m. Its waters are utilized to irrigate an area of some 580 sq. m.

Ken, THOMAS (1637-1711), English prelate and hymn-writer, was born at one of the Berkhamsteads, Hertfordshire; became rector of Little Easton, Essex (1663-5), and of Brightstone, Isle of Wight (1667-9). Thereafter, till 1672, he was a prebend at Winchester, and rector at E. Woodhay, Hampshire. In 1679-80 he was appointed chaplain at the Hague to Mary, wife of William, Prince of Orange, and in 1683 chaplain with Lord Dart-

mouth at Tangier. Then he was nominated (1685) by Charles II. bishop of Bath and Wells. He attended both the king and the Duke of Monmouth in their last hours. Under James II. he was one of the 'seven bishops' sent to the Tower, and in 1691 was deprived of his see as a nonjuror. Ken wrote *Hymns for Morning, Evening, and Midnight* (1686); *Practice of Divine Love* (1686); *A Letter to Archbishop Tenison* (1685), reprinted in 1703 as *A Dutifull Letter from a Prelate to a Prelate*; collected *Works* (4 vols. 1721). See *Lives* by Hawkins (1713), Bowles (1830), Anderdon (1851-4), and specially Dean Plumptre (1888-90).

Kena. See KENEH.

Kenath, Biblical city of Manasseh beyond Jordan, called also Nobah (Num. 32:42). The site is thought to be the later Kanatha, about 58 m. directly E. of the s. end of the Sea of Galilee. Nobah is noticed (Judg. 8:11) with Jogbehah (Jubeihah) in Central Gilead; but the whole of Bashan belonged to Manasseh.

Kendal, or **KIRKBY KENDAL**, munici. bor., Westmorland, England, 8 m. E. of Lake Windermere. Near the town are the ruins of a castle noted as the birthplace of Queen Catherine Parr (1509). Manufactures include woollens, hosiery, and carpets, boots and shoes, fishhooks, gunpowder, and paper. Pop. (1911) 14,033.

Kendal, MARGARET GRIMSTON (1849), English actress, was born at Great Grimsby, Lincolnshire, and made her début in London as Ophelia (1866). In 1869 she married William Kendal, the actor. Continuing to appear at the Haymarket Theatre, she achieved a great success as Lilian Vavasour in *New Men and Old Acres* (1880). In 1875 she played under Sir John Hare at the Court Theatre, under Sir Squire Bancroft at the Prince of Wales's, and at the St. James's,

of which her husband and Sir John Hare were joint-managers (1879-88). She shared in her husband's successful American tours (1889-95). A series of articles entitled 'Dramatic Opinions,' contributed to *Murray's Magazine*, were from her pen.

Kendal, WILLIAM HUNTER, stage name of WILLIAM HUNTER GRIMSTON (1843), English actor, born in London. He gained his first experience in Glasgow (1861-1866), and in 1866 appeared at the Haymarket Theatre, London, in *A Dangerous Friend*. Here he subsequently played Orlando, Romeo, Pygmalion, and other parts with success. After appearing at the Court Theatre and the Prince of Wales's, he joined Sir John Hare in the management of the St. James's Theatre (1879-88). In 1889 he married Miss Margaret (Madge) Robertson, and with her toured in America from 1889-95, meeting with widespread appreciation.

Kendall, HENRY CLARENCE (1841-82), 'poet of the Australian bush,' was born in Ulladalla district, New South Wales. After being a clerk in the public service of New South Wales, he settled in 1869 in Melbourne as a journalist, but from 1873 held for a short time an inspectorship of forests in New South Wales. His principal poems—vigorous and sympathetically descriptive—are: *At Long Bay*, *Leaves from an Australian Forest* (1869), and *Songs from the Mountains* (1880). A volume of *Selections*, with Memoir, appeared in 1886. See also Douglas Sladen's *Australian Poets* (1888).

Kendrapara, munic. tn., Cuttack dist., Bengal, India, 35 m. E. of Cuttack. Pop. 18,000.

Kenealy, EDWARD VAUGHAN HYDE (1819-80), barrister, born at Cork; called to the English bar (1847); became Q.C.; and in 1873, as counsel for the Tich-

borne claimant, was censured for eccentric and violent conduct. Having savagely attacked Chief-Justice Cockburn and others in the *Englishman*, he was disbarred (1874). He was elected M.P. for Stoke (1875). See *Memoirs by his daughter* (1908).

Keneh, or QINA, chief tn. of prov. of that name, Egypt, 414 m. S. of Cairo and 2 m. from the r. bk. of the Nile. Pop. 27,500. The province has an area of 650 sq. m., and population of 775,000.

Kenfig, vil., Glamorgan, Wales, 12 m. S.E. of Swansea. In the middle of the 16th century it was inundated by the sea, and almost completely buried in sand. Pop. (1911) 392. See Gray's *The Buried City of Kenfig* (1903).

Kenhardt, vil., Cape of Good Hope, in dist. of same name, 220 m. W. by S. of Kimberley. Pop. 1,500.

Kenia. See KENYA.

Kenilworth. (1.) Market tn., Warwickshire, England, 5 m. N. of Warwick. Ruins still survive of its castle, founded in the time of Henry I. The younger De Montfort held it for six months against Henry III., who issued the *Dictum de Kenilworth* (1266). Edward II. was imprisoned here. Queen Elizabeth bestowed the castle on Dudley, Earl of Leicester, who here entertained his sovereign with splendid pageants. (See Scott's *Kenilworth*.) It was taken by Cromwell and subsequently destroyed. Tanning is the chief industry. Pop. (1911) 5,776. (2.) A suburb of Cape Town, Cape of Good Hope. (3.) Model village for workmen of the De Beers Company, Kimberley, Cape of Good Hope. (4.) Vil., Wellington co., Ontario, Canada, 70 m. W.N.W. of Toronto. Pop. 1,500.

Kenites, a Biblical tribe of the s. of Palestine, referred to in 1 Sam. xv. 6 as being friendly

to David. They are first referred to in Genesis xv. 19, and were a branch of the Midianites.

Kenmare, par. and tn., co. Kerry, Ireland, near the head of Kenmare R., 15 m. s. by w. of Killarney. The town is a favourite bathing resort. Pop. 3,000.

Kenmare River or Bay, a sea inlet, s. co. Kerry, Ireland, 28 m. long and 2 to 6 m. broad.

Kenmore, par. and vil., Perthshire, Scotland, on the riv. Tay, at its efflux from Loch Tay; a popular tourist resort. Pop. (1911) 1,106.

Kennan, GEORGE (1845), American traveller, was born at Norwalk, Ohio; explored Central Siberia and Caucasia in the employ of the Russo-American Telegraph Company (1865-71). During 1885-6 he investigated the Siberian convict system. His impressions, published in the *Century Magazine* (1887-90), excited world-wide interest. He was expelled from Russia (July 1901). Mr. Kennan's chief works are *Tent Life in Siberia* (1870; new ed. 1910), *Siberia and the Exile System* (1891), *Campaigning in Cuba* (1898), and *The Tragedy of Pelte* (1902).

Kennaway, SIR JOHN HENRY (1837), Conservative M.P. for Honiton Division of Devonshire till 1910; President of Church Missionary Society and London Society for Promoting Christianity among the Jews; was one of the vice-presidents of the World Missionary Conference which met in Edinburgh in 1910. Represented East Devon in Parliament, 1870-85.

Kennedy, BENJAMIN HALL (1804-89), English schoolmaster, born near Birmingham; became assistant-master, Harrow (1830-6), and headmaster of Shrewsbury (1836-66); regius professor of Greek, Cambridge, and canon of Ely (1867). His chief publications were contributions to Sa-

brina Corolla (1850); *Curriculum Stili Latini* (1858); *Public School Latin Grammar* (6th ed. 1883); editions of Virgil (1876-81), the *Birds* of Aristophanes (1874), the *Agamemnon* of Aeschylus (1878), and the *Oedipus Tyrannus* of Sophocles (1882); *Between Whiles*, a collection of Greek, Latin, and English verse (1877); the *Ely Lectures* on the revised translation of the New Testament (1882); and *My old Playground Revisited* (1882).

Kennedy, a genus of Australian trailing or twining plants belonging to the order Leguminosæ. They bear pinnate, trifoliate leaves and papilionaceous flowers dark rose in colour.

Kennet, riv., s. of England, rises in the Wiltshire Downs s. of Swindon, and flows 44 m. s., e., and E.N.E. past Marlborough, Hungerford, and Newbury, to join the Thames on the r. bk. at Reading.

Kenneth I., MAC ALPIN (d. c. 860), king of Scots, son of Alpin, king of Dalriada; having conquered the Picts (846), became Ard-Righ, or ruler of the united monarchy. He established his chief seat at Scone.

Kenneth II. (d. 995), king of Scots, son of Malcolm I.; succeeded 971; warred against the Strathclyde Britons, overran Northumbria to the Tees, and established his sway over the Lothians. Kenneth II. was treacherously slain by Fenella, the daughter of a chief of Angus.

Kennicott, BENJAMIN (1718-83), English Biblical scholar, was born at Totnes, Devon, and laboured at Oxford till his death. In recognition of two dissertations—*On the Tree of Life and The Oblations of Cain and Abel*—he was made a fellow of Exeter College in 1747. Having designed a complete collation of the Hebrew MSS. of the Old Testament, he published it as *Vetus Testa-*

mentum *Hebraicum cum variis Lectionibus* (1776), for which he collated some 615 MSS. of the Hebrew Old Testament and sixteen of the Samaritan Pentateuch. In 1767 he was appointed Radcliffe librarian, and in 1770 was made canon of Christ Church, and was rector of Culham in Oxfordshire (1853-63). His work is, unfortunately, vitiated by his disregard of the Massoretic tradition, and his overestimate of the Samaritan Pentateuch. His labours were continued by De Rossi in the *Variae Lectiones Veteris Testamenti*.

Kennington, suburb of London, in Surrey, 2 m. s.s.w. of St. Paul's. The district returns one member to the House of Commons. Pop. (1911) 72,711. Kennington Oval, s. of Vauxhall Bridge, is the famous cricket ground of the Surrey County Club.

Kenora (formerly RAT PORTAGE), tn., Ontario, Canada, on the Winnipeg R., at its outlet from the Lake of Woods, 122 m. E. of Winnipeg; has saw-mills and flour-mills. Gold is mined in the vicinity. Pop. 5,500.

Kenosha, city, Wisconsin, U.S.A., co. seat of Kenosha co., on the w. shore of Lake Michigan, 50 m. N. of Chicago. It is an active shipping port, and manufactures wagons, brass and leather goods, etc. Pop. (1910) 21,371.

Kenosis, a Greek word employed by some theologians of the 4th century to express the transaction alluded to in Phil. 2: 7—i.e. Christ's relinquishment of His proper and original glory and His taking the form of a servant. The kenosis would thus be but a particular aspect of the incarnation. The subject has provided matter for much controversy in ancient and modern times. See Dörner's *Christian Doctrine* (1880-2); Gifford's *Incarnation* (1897); Bruce's *Humiliation of Christ* (2nd ed. 1881); Hall's *Kenotic Theory* (1898).

Kensal Green, eccles. par. of London, England, 4 m. W.N.W. of Hyde Park Corner. It is noted for its cemetery (1832), where the Princess Sophia, the Duke of Cambridge, Sydney Smith, Anthony Trollope, Thomas Hood, Balfour, and others are buried. Pop. 30,000.

Kensington, parl. and met. bor. and par., suburb of London, 4 m. w.s.w. of St. Paul's. Kensington Gardens, the picturesque grounds of Kensington Palace, communicate with Hyde Park. It returns two members to the House of Commons. Pop. (1911) 172,402.

Kent, maritime o., England, bounded N. by the Thames, and S.E. and S. by the English Channel. In the N. is the Isle of Sheppey, and in N.E. the Isle of Thanet. Off the E. coast are the Downs, protected by the Goodwin Sands. Two parallel ranges of chalk hills traverse the county, terminating to the E. in the high cliffs of Dover, Folkestone, and Hythe. In the S. is the Weald, formerly thickly forested; and the south-eastern extremity is occupied by Romney and other marshes, now reclaimed. The county, called the 'Garden of England', is well wooded and cultivated. The principal rivers are the Thames and Medway, on the N.; Stour, E.; and Rother, S.W. Agriculture is a leading industry: the area under hops (Medway valley) is two-thirds, and that under small fruit one-third, of the total for England; and there are extensive orchards. The chalk downs afford excellent grazing for sheep, and the alluvial lands rich pasture for fattening stock. The oysters of Whitstable and other places are famous. Manufactures include paper, bricks, tiles, pottery, cement, beer, malt, and gunpowder; shipbuilding, manufacture of marine engines, and ironfounding, and coal is also mined. There are large government

establishments at Woolwich, Sheerness, and Chatham. Ramsgate and Dover are harbours of refuge; the latter is the chief port for continental traffic; and there are numerous bathing resorts. The county returns eight members to Parliament, in addition to seven borough members. Canterbury, on the Stour, gives its title to the primate of England. Gavelkind is the characteristic Kentish tenure. The ancient Anglo-Saxon kingdom of Kent practically corresponded with the present county. There are many sites of Roman stations, remains of castles and churches, and among older relics is the cromlech called Kit's Coty House. Area, 1,555 sq. m. Pop. (1911) 1,019,870. See Walter Jerrold's *Kent* (1908).

Kent, a British armoured cruiser (9,800 tons, and 23 knots), launched at Portsmouth in 1901.

Kent, EDWARD AUGUSTUS, DUKE OF (1767-1820), fourth son of George III. and father of Queen Victoria; served with Grey's W. Indian expedition (1794). He was created Duke of Kent and Strathern, and made commander-in-chief in N. America (1799). As governor of Gibraltar (1802), his drastic reforms caused a mutiny.

Kent, JAMES (1763-1847), American jurist, born at Fredericksburgh, New York State; became professor of law at Columbia College (1793-6), recorder of New York (1797-8), judge of the state supreme court (1798-1804), chief-justice (1804-14), and chancellor of New York State (1814-23). He was then reappointed law professor at Columbia, and held the post till his death. His *Commentaries on American Law* (14th ed. 1896) is a standard work. He also wrote *Dissertations* (1795), and *A Course of English Reading* (1831). See *Memoirs of Chancellor Kent*, by his son, William Kent (1898).

Kent, WILLIAM CHARLES MARK (1823-1902)—pseudonym, Mark Rochester—English poet, miscellaneous writer, and journalist; editor of the *Sun* (1845-70) and the *Weekly Register* (1874-81); wrote memoirs on or edited the works of Burns (1874), Lamb (1875), Leigh Hunt (1888), Father Prout (1881), Bulwer-Lytton (1883 and 1898), Dickens (1884), and others. The *Seven Modern Wonders of the World* (1890) describes modern discoveries. His *Poems* (1870) include the once popular 'Longfellow in England.'

Kentei or **KENTAI MOUNTAINS**, in N. Mongolia, near the Siberian frontier, about lat. 49° N., and between long. 106° 20' and 110° 20' E. The Kentei is divided into the Great Kentei, to the N., and the Little Kentei, to the S. Between the two, to the E., is the sacred mountain in which tradition places the tomb of Jenghiz Khan.

Kentia, a genus of tropical spineless palms with terminal pinnate leaves. *K. cistata*, almost the only species cultivated, grows to a height of eighty feet in its native country.

Kentigern, ST. (?518-603), bishop of Strathclyde. When driven away by King Morken, he took refuge with St. David in N. Wales, and became head of the monastery named after his disciple and successor, St. Asaph. Recalled by King Roderick, Kentigern first founded Glasgow Cathedral (St. Mungo). His day is January 13. See Sir J. Rhys's *Celtic Britain*, (new ed. 1904).

Kentish Fire, rhythmical hand-clapping (sometimes reinforced by stamping) adopted at political meetings, either to express approval or to interrupt the speaker; so called because heard in Kent during the anti-Catholic agitation (1828-9).

Kentish Knock, BATTLE OF THE, was fought 15 m. N.E. of the N. Foreland, on Sept. 28,

1662, between two Dutch fleets under Witte, De Witt, and De Ruyter, and the English fleet of Blake and Penn. The Dutch were beaten. *Political History of England*, vii. (1907).

Kentish Rag, a rough, nodular, often quartzose limestone, occurring in the Hythe beds of the Lower Greensand in Kent. Occasionally it contains an abundance of fossil sponges. A softer variety, which occurs in beds alternating with the rag, is known as 'hassock' or 'calk stone.'

Kentish Town, a suburb of London, 3 m. N.N.W. of St. Paul's.

Kent Island, in Queen Anne co., Maryland, U.S.A., the largest island in Chesapeake Bay. Length, 15 m. Here was established the first settlement in Maryland (1631). Pop. about 1,500.

Kenton, cap. of Hardin co., Ohio, U.S.A., on the Scioto R., 59 m. N.W. of Columbus; manufactures hardware, iron fencing, and lumber. Pop. (1910) 7,185.

Kent's Cavern, or **KENT'S HOLE**, hillside cave, 1 m. E. of Torquay, S.W. England; has yielded (1866-80) bones of the cave-lion, cave-hyena, mammoth, woolly rhinoceros, wild bull, Irish elk, reindeer, grizzly bear, wild cat, horse, and beaver, intermingled with shells, ashes, charcoal, and human implements of stone and bone, the latter including two harpoon-heads made from reindeer's antler, several bone awls, and a bone needle. See British Association Reports, 1884-83; Dawkins's *Early Man in Britain* (1890); and Munro's *Prehistoric Problems* (1897).

Kentucky. (1.) One of the central states of U.S.A., with an area of 40,598 sq. m., including 417 sq. m. of water. It was admitted as a state in 1792. The surface is rolling, except in the eastern part, where it rises into the broken, wooded Alleghany plateau, the western portion of

the Appalachian Mountain system. The Ohio flows along the northern boundary, and the Mississippi forms its western limit. The state is drained by the Big Sandy, the Kentucky, Licking, Cumberland, Tennessee, and other branches of the Ohio. The capital is Frankfort, and the largest city is Louisville, on the Ohio. The agricultural industry is the most prominent, the principal products being tobacco, Indian corn, wheat, oats, and hemp. Kentucky raises about one-third of the tobacco of the whole country. The principal products of manufacturing industry are tobacco, meat packing, flour, lumber, and liquors. The mineral resources consist mainly of coal; in 1909 the amount mined was 10,296,145 short tons. Iron occurs in the coal region. There is a considerable output of petroleum, and in the output of fluor-spar Kentucky is a leading state. The population in 1910 was 2,289,905. (2.) River of the U.S.A., a left branch of the Ohio, is formed by the junction of three forks at Proctor, Lee co., Kentucky, and flows N.W. to its junction with the Ohio. The length is 280 m., and the area of its drainage basin 7,425 sq. m. It is navigable to the Forks.

Kentville, tn., Nova Scotia, Capital of King's co., 50 m. N.W. of Halifax. Pop. 2,000.

Kenwyn, par., S.W. Cornwall, England, 1 m. N.W. of Truro; has tin mining and smelting works. Pop. (1911) 8,395.

Kenya, extinct volcano, British E. Africa, immediately to the s. of the equator. It is cleft at the summit into two points, Batian (17,200 ft.) and Nelion (17,160 ft.). There are fifteen glaciers, most of them within an area of a square mile.

Kenyon, tn., Glengary co., Ontario, Canada, 55 m. W. by s. of Montreal. Pop. 5,500.

Kenyon, JOHN (1784-1856), philanthropist and minor poet, born in Jamaica. Among his literary friends were Rogers, Southey, Lamb, and chiefly the Brownings. From Weimar he brought personal reminiscences—unpublished—of Goethe, Schiller, Herder, and Wieland. He wrote *Rhymed Plea for Tolerance* (1833); *Poems* (1838); *A Day at Tivoli* (1849).

Keokuk, one of the co. seats (locally known as the 'Gate City') of Lee co., Iowa, U.S.A., on the Mississippi, 34 m. s.s.w. of Burlington. It is at the foot of the Des Moines rapids. There are manufactures of flour, beer, machinery, soap, etc. Pop. (1910) 14,008.

Keonjhar, tributary state, India, in Orissa division of Bengal. Area, 3,100 sq. m.; pop. 286,000.

Keonthal, hill state, India, in the Punjab. Area, 120 sq. m.; pop. 23,000.

Kephr, the national beverage of the peoples of the Caucasus, is prepared by the action of a peculiar fungus known as 'kephir grains' on cow's milk; when kept in closed vessels, the milk undergoes fermentation. It is refreshing, and very sustaining.

Kepler, JOHANN (1571-1630), German astronomer, was born at Weil, in Württemberg, and became in 1594 mathematical lecturer in the gymnasium at Gratz. His reputation was enhanced by the publication in 1596 of the *Mysterium Cosmographicum*, in which he attempted to establish a mystical geometry of the heavens. In October 1600 he removed to Prague as Tycho Brahe's assistant, and a year later succeeded him as imperial astronomer. He observed in 1604 the temporary star in Serpentarius, and published in 1606 a treatise connecting the apparition with the 'Fiery Triangle' of astrological import.

His *Astronomia Nova* (1609) contained the laws that the planets travel in ellipses, and describe areas proportional to the times, and adumbrated a science of celestial physics. On the death in 1612 of the Emperor Rudolph II., Kepler took up his abode at Linz as professor of mathematics, while retaining his post at court. He published in 1618-21 an epitome of the Copernican astronomy, and in 1619 his *Harmonices Mundi, Libri V.*, in which he announced his third law, that the squares of the planetary periods are as the cubes of their distances from the sun. At Ulm, where he had sought a refuge from war troubles, the Rudolphine Tables appeared in 1627. They represented a reform of astronomy based upon Tycho's observations, and retained standard authority for a century. He wrote two works on optics, the *Paralipomena* to Vitellio (1604), and *Dioptrice* (1611; new ed. 1904), recommending in the latter the construction of telescopes with two convex lenses. His *Stereometria* gives him a place among the founders of the infinitesimal calculus. His *De Cometis* (1619-20) treats of the great comets of 1607 and 1618. A complete edition of his *Opera* was published by Frisch (8 vols. 1858-72). See Brewster's *Lives of Galileo, Tycho Brahe, and Kepler* (8th ed. 1874); Müller's *Johannes Kepler* (1903); and Günther's *Johannes Kepler* (1905).

Kepler's Laws, of planetary motion. (1.) The planets describe ellipses about the sun whose centre is a focus. (2.) The radius vector of each planet sweeps over equal areas in equal times. (3.) The squares of the periodic times of any two planets are proportional to the cubes of the major axes of the orbits. From law (1) it follows that the force of attraction is as the inverse square of the distance; from law (2) that the

sun's attraction holds the planets in their orbits, the resultant attraction being along the line between the planet and the sun. By law (3) the relative distances of the planets from the sun may be calculated. See Astrand's *Keplerscher Probleme* (1890).

Keppel, tn., Grey co., Ontario, Canada, 110 m. N.W. of Toronto. Pop. 3,800.

Keppel, AUGUSTUS, VISCOUNT (1725-86), English admiral, second son of the second Earl of Albemarle, accompanied Anson round the world (1740-4). In 1759 he was in command of the *Valiant* at the battle of Quiberon Bay. In July 1778 he fought a much-criticised action off Brest. Keppel was raised to the peerage (1782), and employed at the Admiralty as first lord.

Keppel, SIR HENRY (1809-1904), English admiral, son of fourth Earl of Albemarle. He distinguished himself in the China wars (1841-2), and, with Rajah Brooke, in attacks on piratical strongholds at the Straits Settlement (1844). He destroyed Chinese war-junks in Fat-shan Bay (1857), and commanded the naval brigade before Sebastopol (1855). He became admiral of the fleet (1875). He published *Expedition to Borneo* (1846), *A Visit to the Indian Archipelago* (1853), and *A Sailor's Life under Four Sovereigns* (1899). See West's *Memoir* (1905).

Ker, FAMILY OF, the surname of two noble families of Anglo-Norman lineage, Roxburghie and Lothian. They are believed to have come to Scotland in the 13th century, and settling in Roxburghshire, became the founders of the two families, the Kers of Fernihirst and the Kers of Cessford. Of the former the Marquis of Lothian is the chief male representative, and of the latter the Duke of Roxburghie is the head. Among the more celebrated mem-

bers of the family were Robert Carr (the English form of the name), the favourite of James VI., afterwards Earl of Rochester; Sir Robert Ker, first Earl of Roxburghie, who accompanied James VI. into England, and was Lord Privy Seal in the reign of Charles I.; and John Ker, third Duke of Roxburghie, the well-known bibliophile. The Lothian family use the spelling 'Kerr' and the Roxburgh family 'Ker.'

Ker, JOHN (1819-86), Scottish divine, was born at Tweedsmuir, Peeblesshire. He made his mark as a preacher chiefly at Glasgow. He was professor of practical training in the United Presbyterian Hall from 1876 until his death, and was author of *Sermons* (1869-86), *The Psalms in History and Biography* (1886), *Lectures on the History of Preaching* (1888).

Kerak (anc. *Kir-Hareseth*, formerly cap. of Moab), tn. of Syria, 10 m. E. of the Dead Sea. Pop. 7,800.

Kerala, ancient kingdom of S. India, one of the divisions of the Dravida country. It corresponds with the British districts of Malabar and Canara.

Kerang, tn., Gunbower co., Victoria, Australia, 150 m. N.N.W. of Melbourne. Pop. 1,400.

Kerason, or KERASUND, tn., Asia Minor, on the Black Sea, 70 m. W. of Trebizonde, has a fortress dating from Byzantine times. Cherry trees were first introduced into Italy by Lucullus from Kerason when it was the Greek colony of Kerasos. It exports hazel nuts, walnuts, hides, and timber. Pop. 10,000.

Keratin, a substance which occurs in the outer layers of the epidermis in vertebrates. Chemically it belongs to the group of the albuminoids—substances which give some, but not all, of the reactions of proteins. The special properties of keratin

are its extreme insolubility and its high percentage of sulphur.

Kerbela, tn., Asiatic Turkey, 60 m. s.s.w. of Bagdad, w. of the Euphrates, near the ruins of Babylon. The tomb of Hussein, the son of Ali, is a place of pilgrimage for Shiite Mohammedans. Kerbela is the headquarters of the chief priest of the Shiahs. Dates and cereals are exported, and sacred bricks and shrouds stamped with verses from the Koran are made. Pop. 65,000.

Kerch, or **KERTCH**, tn., seapt., and fortress, Russia, at the E. extremity of the Crimean peninsula (Taurida gov.), on the Strait of Kerch or Yenikale (20 m. broad and 22 m. long), which connects the Black Sea and the Sea of Azov. It contains an old Turkish citadel. Kerch represents the ancient *Panticapaeum*. Here have been found *chef's-d'œuvre* of Graeco-Scythian art. In 1872 catacombs were discovered, with curious wall-paintings and sarcophagi, mostly assigned to the 4th century. Grain, salt, and flour are exported. The chief industries are the manufacture of beer, tobacco, flour, soap, and leather. Pop. 40,000. See L. Stephani's *Die Alterthümer von Kertsch* (1880); Macpherson's *Antiquities of Kerch* (1857); Gilles' *Antiquités du Bosphore Cimmerien* (1854).

Kerguelen Land, or DESOLATION ISLAND, in Indian Ocean, 50° S. lat. and 70° E. long., discovered by Kerguelen Trémarec in 1772. It is mountainous (Mt. Ross, 6,166 ft.) and glaciated, with deeply-indented shores. It is uninhabited. Here is found the Kerguelen cabbage (*Pringlea antiscorbutica*), the only species of its genus, natural order Cruciferæ, which is much valued by sailors as a vegetable and as a preventive of scurvy. The island was annexed by France in 1893. It has two harbours. Area about 1,400 sq. m.

Keriya, or **KIRIA**, tn. and oasis, Eastern or Chinese Turkestan, 100 m. E.S.E. of Khotan; has gold mines, and trades in silk, grapes, raisins, and tea. Pop. 12,000.

Kerkrade, comm. of the Netherlands, in Limburg, 10 m. N.N.W. of Achen. Pop. (1910) 15,666.

Kerkuk, or **SHAHR-ZUL**, tn., Asiatic Turkey, in vilayet of Mosul, 150 m. N. of Bagdad. Salt, petroleum, naphtha, and alabaster are obtained. It is the see of a Chaldean bishop. Pop. 30,000.

Kerkyra. See CORFU.

Kermadec Islands, group of volcanic islands in the Pacific, belonging (since 1887) to, and about 600 m. N.N.E. of, New Zealand. Area some 15 sq. m. Raoul, or Sunday, the largest, is 20 m. in circuit, and inhabited (1906) by five people.

Kerman, or **KIRMAN**. (1.) Province S. Persia (anc. *Caramania*), with Baluchistan on the E., and the Gulf of Oman on the S. Area, 60,000 sq. m. The desert of Kerman occupies the N. and N.E., and the remainder is mostly barren. Carpets and shawls are made. Pop. about 600,000. (2.) Chief town of above province, 225 m. N. by E. of Bender Abbas, on the Persian Gulf. Carpets, silk, and dates are exported. Manganese and borax are found in the vicinity. Pop. about 80,000.

Kermanshah, or **KIRMANSHA-HAH**, city and cap. of prov. Kermanshah, Persia, 270 m. w.s.w. of Teheran, is an important caravan centre on the road between Teheran and Bagdad. The chief exports are silk-yarns, opium, raw hides, gum, carpets, nuts, fruit, and wool. Pop. 60,000.

Kermes Mineral, or amorphous sulphide of antimony, may be prepared by boiling a mixture of gray sulphide of antimony (crystalline) and sulphur in a solution of sodium carbonate, filter-

ing whilst hot, and acidifying with sulphuric acid. The precipitate, of a bright red-brown colour, is digested in a solution of tartaric acid, to remove any trioxide that may have been formed, washed with water, and dried. Kermes mineral is now represented in pharmacy by sulphurated antimony, which is a mixture of sulphides and oxides of antimony.

Kernahan, COULSON (1858), English critic and writer, born at Ilfracombe. He has written several problem novels, such as *A Dead Man's Diary* (1890) and *A Book of Strange Sins* (1899). He also wrote *The Child, the Wise Man, and the Devil* (1896); *God and the Ant* (1896); *Scoundrels and Co.* (1901); *The Face beyond the Door* (1904); *The Jackal, Visions, A World without a Child* (1906), *An Author in the Territories* (1908).

Kernaby, KERNABY, or HARVEST QUEEN. See HARVEST CUSTOMS.

Kerner, ANDREAS JUSTINUS (1786-1862), German lyric poet, born at Ludwigsburg; became the intimate friend of Uhland, and practised medicine successively at Wildbad and Weinsberg. Kerner was one of the chief poets of the 'Swabian School,' and published *Reiseschatten von dem Schattenspieler Luchs* (1811), *Romantische Dichtung* (1817), *Der letzte Blütenstrauß* (1852), as well as a book on animal magnetism, *Die Seherin von Prevorst* (1829), which caused some stir. His poetry resembles the *Volkslieder*. With Uhland and Schwab he issued *Der poetische Almanach* (1812), and *Der Deutsche Dichterwald* (1813). See Reinhard's *Justinus Kerner* (2nd ed. 1886); and J. Kerner's *Sämmtliche poetische Werke*, with Life, by J. Gaismaier.

Kerosene. See PETROLEUM.

Kéroualle, LOUISE RENÉE DE (1649-1724), mistress of Charles II.

and mother of the first Duke of Richmond, was a native of Brittany. She was created Duchess of Portsmouth. She retired to France in 1688, after the death of Charles. See Forneron's *Louise de Kéroualle* (trans. by Mrs. Crawford, 1897).

Kerowlii. See KARAULI.

Kerria, a monotypic genus of plants belonging to the order Rosaceæ. *K. japonica* is a beautiful, hardy, deciduous shrub, growing to about six feet in height. It is popularly known as the Japanese rose, but must not be confounded with *Rosa rugosa*. It has thin leaves, unevenly serrated, and in summer and autumn bears abundance of large, solitary, terminal, yellow flowers, each with five sepals, five petals, and numerous stamens.

Kerry, maritime co., prov. Munster, Ireland. Its coast-line (Atlantic) is broken by two large peninsulas, by Dingle Bay and Kenmare R., and by Tralee, Bantry, and Ballinskelligs Bays, and Smerwick, Castlemaine, and Valentia harbours. The chief islands are the Blaskets, Valentia, and the Skelligs. The surface is low in the N., but in the main wild and mountainous, and very picturesque. The principal mountains are Macgillieuddy's Reeks, with Carrantuohill (3,410 ft.), the highest summit in Ireland, Mangerton (2,756 ft.), Brandon (3,127 ft.), Slieve Mish, Glendruey, Derrynasaggart, and Caha Mts. Lakes include the celebrated Killarney Lakes. Mineral springs occurs in various places. Oats and potatoes form the principal crops, and cattle are numerous. Slate and flag-stone are quarried at Valentia. Coarse woolen and linen goods are manufactured. Kerry returns four members to Parliament. Area, 1,859 sq. m. Pop. (1911) 159,268.

Kersey, vil., near Hadleigh, Suffolk, England; gives its name to a light woollen cloth.

Kertch. See KERCH.

Kerulen. (1.) River of N.E. Mongolia, one of the head-streams of the Amur, flows mostly through the northern outskirts of the Gobi to its junction with the Argun or Khiliar below the Dalai-nor or Kulun-nor. Length, nearly 600 m. (2.) Or KYRYLUN, or URGO, tn., N. Mongolia, over 350 m. E. of Urga, on the above river, in lat. 48° 3' N. and long. 114° 24' E. It has a celebrated Buddhist convent. Pop. 1,500.

Keshab Chandra Sen (1838-84), born in Calcutta; became the leader of the religious movement known as the Brahma Samaj. Establishing a weekly paper, the *Indian Mirror*, as the organ of his creed, he made a brief visit to England, where he was warmly welcomed by Unitarians. Subsequently he devoted his energies to the reform of the marriage laws; and the passing of the Native Marriage Act of 1872 was largely the result of his efforts.

Kesmark, ancient tn., Hungary, co. Szepes, at eastern foot of the Hohe Tatra, 130 m. N.E. of Budapest; has manufactures of linen. Pop. 6,000.

Kessel-Loo, comm., Belgium, in Brabant, an eastern suburb of Louvain. Pop. 7,500.

Kessingland, coast par. and vil., Suffolk, England, 5 m. s. by w. of Lowestoft. Pop. 1,400.

Kesteven, PARTS OF, a subdivision of Lincolnshire, forming its s.w. portion. Area, 728 sq. m. Pop. (1911) 111,332.

Kestrel, the name given to a group of species of the genus *Falco*, sometimes erected into a separate genus *Tinnunculus*, and distinguished by the bell-like note and the pattern of the plumage. Kestrels are chiefly brown, with dark spots, and have a broad sub-terminal black band on the

tail; the females are darker and more distinctly barred than the males. In the common kestrel, or wind-hover (*F. tinnunculus*), the male has the anterior part of the upper surface bluish-gray, and the cere, legs, and feet yellow. The total length is about 14 in., while the wings are some $\frac{9}{4}$ in. long. The bird is very widely distributed over Europe, Asia, and Africa, and has even been taken in Massachusetts, though it is replaced in N. America by another species (*F. sparverius*). The kestrel feeds chiefly on mice or the larger insects. The name 'wind-hover' is given on account of the habit of hanging in mid-air with the head against the wind. The lesser kestrel (*Falco cenchris*) is a southern form which occasionally strays to Britain; it is distinguished by its smaller size and its white instead of yellow claws.

Keswick, tn., Cumberland, England, 16 m. w.bys. of Penrith. The town is beautifully situated near the lower end of Lake Derwentwater and near Skiddaw, Saddleback, and other mountains. Keswick is a favourite tourist centre, and in recent years has become noted for its annual Christian conference. It manufactures lead pencils, though the plumbago is no longer mined in Borrowdale. Southeby resided here from 1804 till his death in 1843. Pop. (1911) 4,403.

Keszthely, tn., Zala co., Hungary, on w. shore of Lake Balaton; 100 m. s.w. of Budapest; has quarries of marble and basalt. Pop. 6,600.

Ket, or **KETT**, ROBERT (d. 1549), English rebel, was a Norfolk tanner who headed a provincial rising in Edward VI.'s reign as a protest against the enclosure of commons. Ket successfully besieged Norwich (1549), but was overcome by the Earl of Warwick and hanged.

Ketch, in its older sense, a stoutly-built, two-masted craft, used especially as a bomb-vessel in the British navy. It was rigged almost exactly as a topsail schooner. The term is applied at the present day to a two-masted, fore-and-aft-rigged craft, in which the mizzen is considerably shorter than the fore mast. Thus the mizzen of a ketch is of a size intermediate between that of the mainsail of a fore-and-aft schooner and the jigger of a yawl.

Ketch, JACK (d. 1686), a headsman who acquired notoriety as the clumsy executioner of Lord Russell (1683) and the Duke of Monmouth (1685). Subsequently a synonym for an executioner.

Ketchup, a kind of sauce, of which mushroom ketchup and walnut ketchup are perhaps the best known examples.

Ketones, a series of hydrocarbon derivatives, in which two, either similar or different, alkyls are united to a carbonyl (CO) group. Thus, acetone or dimethyl ketone is $(\text{CH}_3)_2\text{CO}$, and propyl ethyl ketone is $\text{C}_2\text{H}_5(\text{CH}_3)\text{CO}$. Ketones are prepared by oxidizing secondary alcohols, or by heating the calcium salt of a fatty acid—acetone being prepared on the large scale from calcium acetate in this way. Ketones are stable compounds that on reduction yield secondary alcohols, and unite with acid sulphites to form crystalline derivatives. They break up on oxidation. The lower members of the family are peculiarly smelling liquids; and the higher, inodorous solids.

Ketshwoyo. See CETYWAWO.

Kettering, mrkt. tn., England, in co. of and 14 m. N.E. of Northampton. The church of SS. Peter and Paul is a handsome edifice in Perpendicular style. Boots and shoes are extensively manufactured; other industries

are clothing, leather-dressing, and iron-founding. Pop. (1911) 29,976.

Kettle-drum. See DRUM.

Kettwig, tn., Rhenish Prussia, 13 m. N.E. of Düsseldorf. Pop. (1910) 6,742.

Keuper, the uppermost subdivision of the Triassic system, or New Red Sandstone. It consists essentially of red and green clays, with beds of white or brown sandstone, and some conglomerates. Some of these sandstones are of great importance in the Midlands of England, where they are known as water-stones. Among the red marls deposits of rock salt are found (from 700 to 3,000 feet thick), and the salt industry of Cheshire depends on these beds. In Germany the Keuper includes an impure coal—the Lettenkohl.

Kevelaer, tn., Rhenish Prussia, 25 m. N.N.W. of Crefeld. Pop. (1910) 7,798.

Kew. (1.) Suburban metropolitan dist. included in Richmond borough, Surrey, England, on the Thames, 6 m. s.w. of Hyde Park Corner. The church on Kew Green, built in 1713, contains the mausoleum of the first Duke and Duchess of Cambridge, and in the churchyard is the grave of the painter Gainsborough. Dr. Turner (the 'father of English botany,' d. 1568) had at Kew a herbal garden of some note. In the 17th century Kew House was held by Sir Henry Capel, who devoted much attention to cultivation. In the 18th century, Frederick, Prince of Wales, made it his chief residence. George III. purchased the property, and Queen Charlotte died at Kew Palace in 1818. The Royal Botanic Garden was founded by the dowager Princess of Wales in 1759. The area at that time was only about eleven acres. In 1840 Queen Victoria resigned the gardens for the public benefit. Since that time immense improvements

have been effected, and the area now amounts to 288 acres. The Temperate House, completed in 1899, is probably the largest plant-house in the world. Connected institutions are the herbarium, museums (three) of economic botany, botanical library, the Jodrell laboratory, and a collection of paintings by Miss North. There is a Chinese pagoda, erected in 1761. In 1897 Queen Victoria handed over Kew Palace and the Queen's Cottage to the nation. At Kew Observatory, Richmond, chronometers and other scientific instruments are tested. Pop. of par. 2,700. (2.) Bor., Victoria, Australia, a residential suburb of Melbourne. Pop. 10,000.

Kewanee, tn., Henry co., Illinois, U.S.A., 130 m. w.s.w. of Chicago; manufactures agricultural implements; bituminous coal is mined. Pop. (1910) 9,307.

Kewkiang. See KIU-KIANG.

Key. See LOCKS.

Key, in music, signifies the scale in which a composition is written. (See SCALE.) Key is also a name given to the outward termination of the levers in keyboard instruments, to the levers controlling valves in certain wind instruments, and to the appliance used in tuning pianos and harps.

Key, in engineering, a general term denoting anything that fastens, and frequently a small steel bar in the shape of a wedge.

Key, SIR ASTLEY COOPER (1821-88), English naval officer, born in London; served at the battle of Obligado (1845), and in 1854-5 was present at the bombardment of Bomarsund and of Sveaborg; served at Calcutta during the mutiny, and in the China war (1858-60), he himself capturing Commissioner Yeh. In 1872 he was appointed president of the Royal Naval College at Greenwich. In 1878 he became admiral,

and was a lord of the Admiralty from 1879 to 1885.

Key, FRANCIS SCOTT (1780-1843), American lawyer and poet, born in Maryland; was the author of the national lyric, *The Star-spangled Banner*. In 1857 he published a volume of Poems.

Key-dwellers, the name given by archaeologists to an extinct race formerly inhabiting the many islets or *keys* (Sp. *cayos*) lying off the S.W. coast of Florida. Their islands were to a great extent artificial, being enlargements of tiny reefs or shoals. Their civilization shows an affinity with that of Central America. See F. H. Cushing's report of the Pepper-Hearst Expedition, Philadelphia, 1897.

Key Islands, in Malay Archipelago. See KEI ISLANDS.

Keymer, par. and vil., Sussex, England, 8 m. N. of Brighton. Pop. 4,400.

Keyne, ST. (d. 490), a Welsh saint, reputed to have endowed wells with miraculous powers.

Keynsham, mrkt. tn. and par., Somerset, England, 5 M. S.E. of Bristol. There are brass foundries and dyeworks. Here are the remains of an abbey founded in 1172. Pop. (1911), rural dist., 10,141.

Keyser, JAKOB RUDOLF (1803-64), Norwegian author, born at Christiania, where he lectured on history from 1829. With Munch he issued *Norges Gamle Love* (1846-9). In 1847 he wrote *Nordmændenes Religionsforfatning i Hedendommen*, which was long a standard work on Scandinavian mythology; and in 1856-8 published *Den Norske Kirkes Historie under Katholicismen*. After his death appeared his *Norges Historie* (1866-70).

Key West, fort, city and winter resort, Florida, U.S.A., co. seat of Monroe co., on an island of the same name, the most westerly of the Florida keys. It

has a fine harbour, the entrance to which is guarded by Fort Taylor. Sponge fishing and cigar manufacturing are industries. In 1910 the exports were valued at \$223,670 (mainly cigars), and the imports at £267,890. The extension of Florida East Coast Railway to Key West was completed in 1911. The town suffered severely from hurricane in October 1909 and again in October 1910. The United States have a naval station here. Pop. (1910) 19,945.

K.G., Knight of the Garter.

K.G.C., Knight of the Grand Cross.

K.G.C.S.I., Knight Grand Commander of the Star of India.

K. G. F., Knight of the Golden Fleece.

K.H., Knight of Hanover.

Khabarovsk, tn., E. Siberia, the seat of government of the maritime prov., at confluence of the Amur and Ussuri Rivers, 470 m. by rail N.N.E. of Vladivostok. It is a centre of the fur (sable) trade. Pop. 16,000.

Khadija. See MOHAMMED.

Khafra, CEPHREN, or SAOPHIS, an Egyptian king of the fourth dynasty, who built the second of the three pyramids.

Khalbar or **Khyber Pass**, narrow defile, 33 m. in length, between N.W. India and Afghanistan, through the Safed Koh. It forms part of the route between Peshawar and Kabul, and at Jamrud is 450 ft. wide; at the fort of Ali Masjid, 9½ m. farther on, it is only 40 ft. wide. The summit of the pass is at Landi Kotal, which is 1,700 ft. higher than Jamrud, and 1,970 ft. higher than Dhaka fort, the w. end of the pass. It is overhung by mountains which rise sheer from the pass to heights varying from 1,400 to 3,000 ft. It is the only pass in the north-western frontier practicable for artillery. All the conquerors of India except Alex-

ander the Great and the British made their way into India through it. It was forced by British troops during the Afghan wars of 1839-42 and 1878-80, and again in the Afridi campaign of 1897. See Sir R. Warburton's *Eighteen Years in the Khaibar* (1900).

Khairabad, chief tn., Sitapur dist., United Provinces, India, 45 m. N. by W. of Lucknow. Pop. 14,000.

Khairagarh, feudatory state, Central Provinces, India. Area, 940 sq. m. Pop. 130,000. Cap. Khairagarh.

Khair-ed-din (d. 1890), a Circassian slave, educated by the bey of Tunis. For seven years (1879-86) he was grand vizier of the Porte at Constantinople. He wrote *La plus sûre direction pour connaître l'état des Nations* (1868).

Khairpur, feudatory state in Upper Sindh, India, with an area of 6,050 sq. m. The chief manufactures are cotton, silk cloth, and metal goods. Pop. 200,000. Khairpur, the chief town, 15 m. E. of the Indus, has a population of 14,000.

Khalfa, HAJI, or MUSTAFA-IBN-ABDULLAH (1600-58), Turkish historian, born at Constantinople. His chief work is an encyclopaedia of Oriental biography and bibliography, written in Arabic, and published by Flügel as *Lexikon Bibliographicum et Encyclopedicum Haji Khalfa* (8 vols. 1835-58), with Latin translation.

Kham, or **KHAMS**, prov. of E. Tibet, adjoining Szechuan prov. of China, and traversed by upper courses of Yang-tee-kiang, Mekong, and Salwin (here known as Di-chu or Giama-na-chu). Chief town is Chiamdo ('Tsiamdo) in about 31° N. and 97° 30' E.

Khama, chief of the Bamangwatos, a Bechuana tribe, and one of the most civilized and prosperous of S. African native rulers.

Khamgaon, tn., Akola dist., Berar, India, 78 m. W. by S. of



The Khaibar Pass.

Amraoti; has a cotton and opium trade. Pop. 16,000.

Khamil. See HAMI.

Khammurabi, or HAMMURABI. (See BABYLONIA.) For special significance of his legislation, see also Johns's *Journal of Theological Studies* (Jan. 1903), and *The Oldest Code of Laws in the World* (1904); Cook's *Laws of Moses and the Code of Hammurabi* (1904).

Khamseh, prov., Persia, between Kazvin and Tabriz. Cap. Zenjen, 180 m. W.N.W. of Tehran.

Khamsin, or KHAMSUN, a hot, dry southerly wind of Egypt, occurring during the fifty days following Easter. It usually blows for three days, but has been known to last a week. The diseases peculiar to the country are then most virulent, and persons dying during its prevalence are buried without ceremony.

Khandesh, E. and W., dists., Deccan, Bombay Pres., India, through which flows the river Tapti. There are several factories for the ginning and pressing of cotton. East Khandesh has an area of 4,545 sq. m., and a pop. of about 970,000. The cap. is Jalgaon. The area of West Khandesh is 5,500 sq. m., and its pop. is 475,000. Dhulia is the cap.

Khandwa, chief tn., Nimar dist., Central Provinces, India, 70 m. S.E. of Indore; contains remains of Jain buildings. It has superseded the old capital (Burhanpur) as a commercial centre. Pop. 16,000.

Khan-Tengri, or TENGRI KHAN, or KAR-GÖL-BAS, mt., Central Asia, the culminating point of the Central Tian-Shan system, E. of Issik-kul, and S. of the Ili R. Alt. 24,000 ft.

Kharbin, or HARBIN, tn. and railway centre in Manchuria, on the Sungari, the principal tributary of the Amur, 370 m. W. of Vladivostok, and 500 N. of Port Arthur. Here the trans-Siberian

railway bifurcates, one branch going E. to Vladivostok, and the other S. to Mukden and Port Arthur. Kharbin is the centre of a rich agricultural and grazing district, and has large mineral fields yet undeveloped. Founded in 1898, it has been well planned and built in modern European style. Industries include flour mills, brick works, distilleries, and meat-packing establishments. During the Russo-Japanese war Kharbin became the chief base of the Russian army. Pop. 50,000.

Kharga, the Great Oasis of Egypt, in the Libyan desert, between 24° and 26° N. and 30° and 31° E., in the province of Assiut. It is 100 m. long from N. to S. and 10 to 50 m. broad. Dates and cereals are the chief products. Pop. 8,400. The chief town is Kharga, 175 m. N.N.W. of Assuan. Pop. 5,400. See H. J. L. Beadnell's *An Egyptian Oasis* (1909).

Kharkov. (1.) Government of S.W. Russia, one of the four composing Little Russia. Area, 21,041 sq. m. Pop. 3,120,000. The surface is flat and monotonous. Much of the soil belongs to the 'black earth' zone. Among its minerals are iron, gypsum, coal, peat, freestone, sandstone, fuller's and potter's earth, chalk, and salt. The culture of silk has lately made great advances. (2.) City and cap. of above gov., 415 m. S. by W. of Moscow. It is one of the most progressive towns of S. Russia. At its Epiphany and Trinity fairs great business is done in horses and wool respectively. The industrial establishments include woollen mills, dyeing and cleaning works, distilleries and breweries, iron and copper foundries, sugar, oil, tobacco, textile, soap, and candle manufactures, and the making of machinery and agricultural implements. The university, founded in 1804, has about

5,000 students. Kharkov was founded in 1650 by Cossacks. Pop. 180,000.

Kharpot, tn., Turkish Kurdistan, 80 m. N.W. of Diarbekir. There is an American Protestant college and a Jacobite convent with a collection of rare manuscripts. Pop. estimated at 30,000.

Khartum, chief tn. of Khartum prov., Anglo-Egyptian Sudan, situated on the tongue of land at the junction of the Blue and White Niles, lat. 15° 36' N. Khartum is connected with Upper Egypt and with Port Suakin on the Red Sea by rail. After the murder here of General Gordon in 1885, the town remained in the hands of the Khalifa and Dervishes until September 1898, when a combined English and Egyptian force under General (now Viscount) Kitchener retook the whole of the Sudan. A completely new town with fine public buildings and airy streets has since arisen. It extends for 4 m. along the river. There is a trade in gum, ivory, and ostrich feathers. The suburb of Khartum North (or Halfaya) on the right bank of the Blue Nile, is connected with the city by a bridge. Pop. (including suburbs) 70,000. Omdurman is 1 m. below Khartum on the White Nile.

Khasgunge. See KASGANZ.

Khasi and Jaintia Hills. See JAINTIA HILLS.

Khasis, tribe inhabiting the Khasi Hills, Assam, India. They are a very primitive people, and speak a monosyllabic language. See Gurdon's *The Khasis* (1907).

Khaskoi, tn., Bulgaria, in E. Rumelia, 60 m. W.N.W. of Adrianople. The manufactures of the district include carpets, woollen goods, silk, etc. Pop. 15,000.

Khatanga, riv. of N. Siberia, issuing from various lakes, about 68° N. and 95° E., flows N. and

N.E. into the Khatanga Gulf after a course of about 600 m.

Khatmandu, cap. of the independent state of Nepal, India, on the Baghmati R., 145 m. N. of Patna. Pop. about 50,000.

Khaya, a genus of tall trees belonging to the order Meliaceæ, and closely allied to the mahogany tree. One species, *K. senegalensis*, the Senegal mahogany, is valuable for its timber. The khayas bear panicles of flowers at the ends of the branches, each flower having four petals and an eight-lobed stamen-tube.

Khayyam, Omar. See OMAR KHAYYAM.

Khazak. See KIRGHIZ.

Khazars, an old semi-nomadic people of Turco-Finnish origin, who formed a kingdom in S. Russia (c. 190-1020 A.D.). In their later history they figure as a commercial people; their principal cities were Itil, Sarkel, and Semender. Their sovereign and many nobles and others embraced Judaism in 740. Their power was largely broken by the Russians under Svyatoslav (965-969), and finally by the Byzantines and Russians combined (1016).

Khedive, the official title of the hereditary viceroy of Egypt. Vali ('viceroy') was used until 1867. Since the British occupation of Egypt the Khedive's power has been almost nominal. Abbas Hilmi Pasha (1874), the present Khedive, the great-great-grandson of Mehemet Ali, the founder of the dynasty, succeeded his father in 1892.

Khélát, KALAT, or KELAT, a native state at the N.E. angle of British Baluchistan, for the most part barren and arid. Area, 71,600 sq. m. Pop. est. at 470,000. The fortified capital, Khelat, is the residence of the ruler of Baluchistan. Pop. about 12,000. See G. P. Tate's *Kalat* (1896).

Kheri, tn. and dist., United Provinces, India, 72 m. N. by W. of

Lucknow. Area of dist., 2,980 sq. m. Pop. dist. 905,000; tn. 6,200.

Kherson. (1.) Government, S.W. Russia, has the Black Sea to the s. and Bessarabia to the w. Area, 27,337 sq. m. Pop. 3,350,000. Almost the whole is steppe land, lying between the Dnieper and the Dniester. Cattle-raising is the chief occupation. The vine, hemp, flax, tobacco, and mustard are grown. Wool, furs, sheepskins, tobacco, cereals, butter, cheese, and caviare are exported. Over fifty German agricultural colonies exist. Odessa is the largest town. (2.) Capital of the above gov., 15 m. from the sea, on the w. side of the Dnieper estuary. It contains an observatory, a marine training college, and two naval shipyards. Kherson was founded in 1778 by Potemkin, the favourite of Catherine II. His tomb is in the cathedral. John Howard, the prison reformer, died here in 1796. Pop. 85,000. (3.) (of the Crimea) tn., mostly ruined, in the south-western extremity of the Crimea, 2 m. w. of Sevastopol. It has a cathedral. Here a Greek colony was probably founded in the 5th century B.C., and here was the traditional scene of the martyrdom of St. Clement of Rome. It was taken by the Russians under Vladimir the Great in 988.

Khingan Mts., two ranges in E. Asia. (1.) GREAT K. separates the Gobi desert plateau from Manchuria. It commences in about 42° N. lat. and 118° 20' E. long., and runs first N.N.E., then N. to Argun R., near its confluence with Shilka; here the Amur commences. Its highest peaks reach about 8,000 ft. (2.) LITTLE K. lies mainly to the s. of the Middle Amur, and E. of the Great Khingan. It continues N. of the Amur up to about 53° N. lat.

Khios. See CHIOS.

Khiva. (1.) Ancient *Khorasmia*; *Kharizm* or *Khwarezm* of Moslem

writers. Vassal khanate of Russian Central Asia, on the Lower Oxus (Amu Daria), bounded on N.E. and E. by the Oxus, on N.N.W. by Aral Sea, and on other sides by Kara-kum desert. Area, about 22,320 sq. m.; pop. estimated at 800,000. The climate is bright and cloudless. Corn, barley, rice, millet, cotton, pease, lentils, tobacco, hemp, poppies, and madder are cultivated, and fruit trees abound. The government is still in name a military despotism of Mohammedan type, but since 1873 the real ruler has been the Russian resident. Khiva formed part of the first and second Persian empires, of the empire of Alexander, and of the califate of the 8th and 9th centuries. The Mongols dealt it terrific blows in the 13th century. In 1512 it was secured by the Uzbegs. (2.) Town, cap. of above khanate, 17 m. from the Oxus, and 450 m. w. of Tashkend. Silks, cottons, and carpets are manufactured. Pop. 5,000. See Abbott's *Journey from Herat to Khiva* (1843); H. Stumm's *Russia's Advance Eastward* (1874); McGahan's *Campaigning on the Oxus and the Fall of Khiva* (1874); Rawlinson's *England and Russia in the East* (1875); and Burnaby's *Ride to Khiva* (1876).

Khnopff, FERNAND (1858), Flemish painter, born at Gremberger; has been much influenced by the work of Burne-Jones, Rossetti, and Holman Hunt, and the early impressionists. He became a member of the *Vingtistes*, and was the moving spirit in the new Société des Beaux-Arts. The enigmatic in expression characterizes his compositions, such as *Le Sphinx*, *L'Aile Bleu*, and *L'Encens*. He has exhibited at the New Gallery and international exhibitions, London; his *Sleeping Medusa* is in the Walker Gallery, Liverpool.

Khoi, tn., Azerbaijan, Persia, 75 m. W.N.W. of Tabriz, and on the trade route between Tabriz and Trebizond. Here in 1514 the Turks under Selim I. routed the Persians under Shah Ismael. Pop. 30,000.

Khol-Khol. See HOTTENTOT.

Khojak Pass, at an alt. of 8,000 ft., leads through the Khoja Amram range, between the British district of Pishin, Baluchistan, and Afghanistan, 53 m. N.N.W. of Quetta. It is on the road to Kandahar.

Khojent, tn., Syr Daria prov., Russian Central Asia, 95 m. S. by E. of Tashkend, on left(s.) bank of Syr Daria. There are manufactures of silk and cotton goods. Throughout the 18th century and at the beginning of the 19th it was the head of a small independent principality. Pop. 32,000.

Khokand. (1.) Town, Asiatic Russia, cap. of Fergana, 225 m. E.N.E. of Samarkand, with which it is connected by rail. Exports cotton and silk. Pop. 85,000. (2.) Or KOKAN. See FERGANA.

Kholm, tn., Lublin gov., Russian Poland, 45 m. E. of Lublin. See of Orthodox bishop, with magnificent cathedral. Pop. 20,000.

Khonds, a people of Kolarian stock who inhabit Madras and the east of the Central Provinces of India. They are quite distinct from the Gonds, with whom, owing to the similarity of name, they have been confused. They number about 700,000.

Khonsar, tn., Irak Ajemi, Persia, 93 m. W.N.W. of Ispahan; has trade in dried fruits. Pop. 12,000.

Khorassan, N.E. prov. of Persia, bounded on the E. by Afghanistan, and on the N. by Transcaspia. The southern part is sandy desert, but the rest, traversed by spurs of the Elburz Mts., has fertile valleys. The province is some 200,000 sq. m. in area. Turquoises are mined

near Nishapur. Wheat, rice, and tobacco are grown; wool, cottons, silk, carpets, fruits, skins, manufactured silver, and turquoises are exported. The capital is Meshed. Pop. 1,000,000.

Khorol, tn., Russia, gov. of and 55 m. W.N.W. of Poltava. Pop. 8,500.

Khorramabad, tn., Persia, in Luristan, 220 m. S.W. of Teheran. Pop. 7,000.

Khorsabad, vil., Turkey in Asia, in vilayet of Mosul, where first were discovered the antiquities of Nineveh.

Khosrau. See CHOSBOES I.

Khotan, oasis and city of E. Turkestan, 160 m. E.S.E. of Yarkand, on the L. bk. of the Khotan Daria. Exports jade, silk, musk, cotton, carpets, felt, wool, and furs. From very early times the Khotan oasis was one of the chief centres of sericulture. Pop. 5,000. Under the Han dynasty (the 4th century A.D.), Khotan is said by Chinese annalists to have been a city of 85,000 people, and a great light of the Buddhist world. The oasis has an area of about 400 sq. m., and a population of 50,000. Cereals, including maize, rice, flax, hemp, tobacco, and cotton, are cultivated. The buried cities of the Khotan district have been discovered by the Swedish traveller Sven Hedin, and visited by Stein, who brought away many inscribed tablets now in the British Museum. See Stein's *Sand-buried Cities of Khotan* (1904), and *Ancient Khotan* (1907).

Khotin, or KHOCZIM, tn., Bessarabia gov., S.W. Russia, 15 m. S.S.W. of Kamenets-Podolski, on the s. side of the Dniester. Pop. 30,000.

Khulna, chief tn. of dist. of same name, Bengal, India, 80 m. E. by N. of Calcutta; has a river trade. Pop. 10,000. The district is 2,077 sq. m. in area, and has a population of 1,250,000. It manu-

factures sugar from dates; rice, jute, and tobacco are grown.

Khunzar, tn., Persia, 100 m. N.W. of Isfahan; has large orchards. Pop. 10,000.

Khurja, chief tn., Bulandshahr dist., United Provinces, India, 50 m. s.e. of Delhi. It exports raw cotton. Pop. 30,000.

Khushab, munic. tn., Shahpur dist., Punjab, India, on the r. bk. of the Jhelum, 105 m. s.s.w. of Rawal Pindi, with a trade in cotton goods. Pop. 12,000.

Khuzar, or **HUSAR**, tn., Bokhara, Central Asia, 130 m. s.e. of Bokhara city. Pop. 10,000.

Khuzistan, or **ARABISTAN** (anc. *Susiana*), prov. of S.W. Persia, between N. end of Persian Gulf and Bakhtiari Mts. It is mostly mountainous, but the soil in the valleys is exceedingly fertile; the southern portion consists of well-watered plains, the Karun being the principal stream. Rice, maize, barley, dates, cotton, wool, and gums are produced. Opium and tobacco (mainly from Isfahan) are also exported. Area, 25,700 sq. m. Pop. 200,000. The cap. is Shuster, 160 m. w. by s. of Isfahan. Pop. 10,000.

Khvalyansk, tn., gov. Saratov, Russia, on the l. bk. of the Volga, 145 m. N.E. of Saratov; trades in grain. Pop. 16,000.

Khyber Pass. See **KHAIBAR PASS**.

Kiakhta, tn., gov. Transbaikalia, Siberia, 180 m. s.e. of Irkutsk, situated close to the Chinese commercial settlement of Maimachin. A very important trading centre, especially for tea, its trade reaching an annual value of £500,000. Pop. 5,000.

Kiama, seapt., Camden co., New South Wales, 60 m. s.s.w. of Sydney. Pop. 1,800.

Kiang. See **KULAN**.

Kiangri, **KIANKAREE**, or **CHAN-GRA**, tn., Asiatic Turkey, 62 m. N.E. of Angora. Pop. about 16,000.

Kiang-si, prov., Central China, with an area of 70,000 sq. m. It contains the basin of the Kan and other rivers draining into the Poyang Lake, which itself has an area of 1,200 sq. m. Many of the rivers of the province are navigable for great distances. There is only a short portage from the head of the Kan R., by the Mei-ling Pass, to the Canton waters. Rice, wheat, silk, cotton, tea, sugar, and tobacco are produced in the valleys; porcelain is manufactured in large quantities at King-te-chen; and there is much valuable timber. Nan-chang-fu is the capital. The head of the Taoist priesthood has always resided in this province. Pop. about 25,000,000.

Kiang-su, maritime prov., China. Area, about 40,000 sq. m. It lies between lat. 31°-35° N. and long. 116°-122° E., is traversed by the Yang-tse-kiang, and intersected in every direction by canals, including the best portion of the Grand Canal. There are many large lakes, natural and artificial. The soil is alluvial, and produces large quantities of rice and wheat, beans, cotton, silk, and peaches. Nanking, its capital, is the residence of the viceroy of Kiang-su and Kiang-si. Shanghai is in this province. Pop. 24,000,000.

Kiang-yin. See **CHIANG-YIN**.

Kiao-chau. See **CHIAO-CHOU**.

Kia-ting-fu. See **CHIATING-FU**.

Kicking Horse Pass, in the Rocky Mts., on the E. boundary of British Columbia, Canada; has an alt. of 5,296 ft., and is crossed by the Canadian Pacific Ry.

Kidd, BENJAMIN (1858), English sociologist, who won distinction by his first work, a brilliant essay on *Social Evolution* (1894). This was followed by *The Control of the Tropics* (1898), *Principles of Western Civilization* (1902), 'The Application of the Doctrine of Evo-

lution to Sociological Theory' (*Ency. Brit.* v. xxix. 1902), and other papers developing further his system of social philosophy.

Kidd, WILLIAM (c. 1650-1701), the piratical Captain Kidd of popular tradition, supposed to have been born in Greenock, Scotland, and to have settled in Boston, Massachusetts. In 1696 he was appointed to command the *Adventure*, with a commission to act against the French and to suppress pirates. In 1699 complaints reached England that Kidd had himself turned pirate. He was captured the same year in Boston, brought to England, tried, and hanged.

Kidderminster, munic. and parl. bor. in Worcestershire, England, 15 m. N. of Worcester, near the confluence of the Stour with the Severn. The church of All Saints, partly Early English, contains several ancient monuments. The manufacture of carpets, introduced about 1735, is still the staple industry; the principal kinds now made are Brussels and Wilton, and to a less extent royal Axminster. Worsted spinning and dyeing are also carried on, and in the vicinity are iron and tin-plate works. It returns one member to the House of Commons. Pop. (1911) 24,333.

Kidnapping is the stealing, carrying away, or secreting any person, and is a common law offence in England, punishable by fine and imprisonment; but the word is more properly used of the forcible abduction or stealing of a person and sending him out of the country, so that he is deprived of the assistance of the law. The twelfth section of the *Habeas Corpus Act* of Charles II. (31 Car. II. c. 2) imposes heavy penalties for this offence. Child-stealing, either with intent to deprive any parent or guardian of the possession of the child, or with intent to steal any article

from its person, is a felony punishable with three years' penal servitude. The Kidnapping Act, 1872, creates certain offences relating to the carrying off of Pacific Islanders from their homes. See also ABDUCTION.

Kidney Bean. See BEAN.

Kidneys are excretory organs whose function is to get rid of nitrogenous waste. Among invertebrates, the commonest form of excretory organ is a small coiled tube, communicating, primitively at least, with the body cavity internally, and also with the exterior. In an annelid—e.g. the earthworm—we get a series of such tubes, each with its own internal and external apertures. Such tubes are known as nephridia. They were probably originally simple drainage tubes, conveying products direct from the oecum to the exterior; but in most instances they are supplied by numerous blood-vessels, and it is from these that the waste products are obtained by the cells of the nephridia. In consequence, a tendency towards the reduction or disappearance of the internal opening manifests itself as we ascend in the scale, and the blood-supply becomes efficient. Again, while primitively each tubule opens independently to the exterior, an obviously advantageous specialization, where the tubules are numerous, is that all should have one common opening. With regard to the vertebrate kidney, it may be sufficient to say that it consists of a compact mass of small tubules, which have lost their primitive internal openings, and open externally into a common duct (the ureter), which conveys their products to the exterior, in many cases through a urinary bladder, in which the fluid products can be temporarily stored.

In man, the kidneys are two excretory organs situated in the

back part of the abdomen, one on each side of the lumbar portion of the spinal column. Each is somewhat bean-shaped, presenting its concave border towards the spine. The peritoneum covers their anterior aspect. Each is about four inches long, two inches broad, and one inch thick, the left being slightly the larger. In the central part of the concave border is a notch known as the hilum, through which enter the blood-vessels, nerves, and lymphatics, and from which arises the ureter or excretory duct. Over the upper end of each kidney is situated a small ductless gland, the supra-renal capsule. The function of the supra-renal bodies is imperfectly known, but their destruction by disease is followed by grave and generally fatal constitutional symptoms. (See ADDISON'S DISEASE.) The function of the kidneys is the secretion of urine, which consists of water containing urea and the various other waste products that result from body metabolism, and are carried to the kidney by the blood in the renal arteries. The average amount of urine secreted in twenty-four hours is fifty ounces, containing about 500 grains of urea and other solids, consisting chiefly of phosphates, urates, chlorides, sulphates, oxalates, and uric acid, with traces of more complex substances.

Diseases.—Malformations of the kidney are occasionally found, the two kidneys being sometimes fused into a horseshoe-shaped organ. Such conditions do not, as a rule, call for treatment. Movable or floating kidney gives rise to little or no trouble as a rule, but in some cases it does produce discomfort and pain. Sarcomatous or cancerous new growths in the kidney are of extreme gravity. They generally produce haematuria—i.e. blood in

the urine, and rapid emaciation. Pain is not invariably present; but should clots of blood be impacted in the ureter, severe renal colic ensues. Medicinal treatment is of no avail, and operative interference is advisable only when the tumour is small and primary, and when the patient is still in fairly robust health. The commonest disease of the kidney is nephritis or inflammation (Bright's disease). (See NEPHRITIS.) Renal colic is generally caused by a calculus or deposit of some of the solid constituents of the urine. Calculi most frequently result from the deposit of uric acid or of calcium oxalate; but blood clots and the ova of parasites, as well as other substances, often form the nuclei of stones. In the form of sand these concretions may give rise to little or no discomfort; but when the calculus approaches the size of a pea, it may become impacted in the ureter, and as it is forced through the narrow tubular portion by the accumulation of urine behind, it leads to agonizing pain, often accompanied by vomiting and collapse. The irritation caused by calculi lying in the pelvis of the kidney occasionally leads to a somewhat similar condition known as pyonephrosis, in which the collection of fluid is pus. The purulent infection may not be confined to the pelvis of the kidney, but may spread to the substance of the gland and produce pyelonephritis. Other causes than calculi may bring about such a result, of which cystitis, or inflammation of the bladder, is the commonest. Tubercle and some infective fevers are also responsible for producing suppuration of the kidney; and similar causes sometimes lead to the development of a perinephritic abscess—i.e. an accumulation of pus around the kidney, which, however, may be caused by

direct injury, by spinal caries, or by perforation of the bowel. In the treatment of renal colic it is generally necessary to keep the patient well under the influence of morphine while the paroxysm lasts. Relief is also got from hot fomentations, and an attempt should be made to soften or break up the concretion by keeping the urine abundant, and in most cases alkaline. *Hyoscyamus* has a soothing effect upon the pain, and piperazine has been much advocated as a solvent of uric acid calculi. Diabetes, although producing great changes in the chemical constitution and in the quantity of the urine, is not due to disease of the kidneys. In the diagnosis of many renal diseases, great assistance is obtained by the recently introduced method of collecting the urine from each kidney separately, by means of the separator, an instrument devised by Luys.

Kidney-stones, small red or brown mammillated, nodular, concretionary masses of clay iron-stone, with veins of calcite, which are found in the Oxford clay near Weymouth in the south of England.

Kidney Vetch, or LADY'S FINGER, a name given to plants belonging to the genus *Anthyllis*, a subdivision of the order Leguminosæ. *A. vulneraria*, the common kidney vetch, is a well-known British herbaceous plant, having glaucous pinnate leaves with a terminal leaflet, and in summer crowded heads of yellow flowers with swollen calyces. The flowers are occasionally cream-coloured or pinkish. The stamens are all united by their filaments, which feature helps to define the genus.

Kidron, or OEDRON (mod. *Wady en Ndr*), brook, Palestine, flows through the valley of Jehoshaphat, then E. between Jerusalem and Mount of Olives to the Dead Sea.

Kidsgrove, urban dist., Staffordshire, England, 7 m. N.W. of Stoke-upon-Trent; has coal mines and ironworks. Pop. (1911) 9,012.

Kidwelly, or CYDWELI, seapt. and mrkt. tn., Carmarthenshire, Wales, near Carmarthen Bay, 8 m. s. of Carmarthen; has coal mines, iron, tin, and brick works. Pop. (1911) 3,035.

Kieff. See KIEV.

Kiekie, a New Zealand shrub, *Freycinetia Banksii*, belonging to the order Pandanaceæ. It climbs to a considerable height, and bears a large quantity of berries crowded on a spadix. The young spadices are made into a jelly.

Kiel, seapt., Prussia, prov. Schleswig-Holstein, on a bay of the Baltic, near the Baltic end of the Kaiser Wilhelm Canal, 70 m. by rail N. of Hamburg. It is the chief naval station of the German empire. It has a university (1,760 students in 1910) and a naval academy. Kiel is one of the principal commercial ports of Germany. Its industries include shipbuilding, flour, oil, and saw mills, engineering works, the preparation of smoked fish, and breweries. In 1909, 5,950 vessels, with a registered tonnage of 634,430, entered the port. The treaty of Kiel, by which Denmark ceded Norway to Sweden, was signed here in 1814. Pop. (1910) 208,845. See H. Eckhardt's *Alt Kiel in Wort und Bild* (1899).

Kielce. (1.) Province of Russian Poland. Area, 3,897 sq. m. The Vistula separates it from Austrian territory on the s. and s.e. The chief minerals are iron, lead, and copper; zinc, coal, calamine, marble, gypsum, clay, and sulphur are also found. Potatoes are an important crop, and grain is exported. The chief industries are potteries, tanneries, tile works, sawmills, flour mills, manufactories of metal objects.

Pop. about 1,000,000. (2.) Town, cap. of above gov., 105 m. s. of Warsaw. It is the see of a Roman Catholic bishop, and has Roman Catholic and Orthodox cathedrals. The chief industries are rope-making, dyeing, brick-making, and distilling. There are also iron and sugar factories. Pop. 25,000.

Kielland, ALEXANDER LANGE (1849-1906), Norwegian author, born at Stavanger; was burgomaster of his native place 1891-1906. One of the leading Norwegian novelists, his condensed, epigrammatic style is not unlike that of Maupassant. He first made his reputation with the nautical novel, *Garman og Worse* (1880), which was followed in rapid succession by the novels *Arbeidsfolk* (1881); *Else* (1881); *Skipper Worse* (1882); *Gift* (1883); *Fortuna* (1884); *Sne* (1886), with some fine descriptions of winter scenery; *Bettys Formynder* (1887), a satirical play; *Sankt Hans Fest* (1887); *Professoren* (1888), a play; and *Jacob* (1891).

Kleupert, JOHANN SAMUEL HEINRICH (1818-99), German cartographer, was born in Berlin. From 1845 to 1852 he was director of the Weimar Geographical Institute; was appointed extraordinary professor of historical geography at the Berlin University in 1859, and director of the topographical department of the Statistical Bureau in 1864. Among his works are a historical *Atlas von Hellas* (1841-6), *Karten von Kleinasien* (1843-5), *Hand-Atlas* (1854), *Atlas Antiquus* (1855), and a great map of Asia Minor (unfinished). He was also author of a *Lehrbuch* (1879) and *Leitfaden der Alten Geographie* (1879; Eng. trans. 1881).

Kierkegaard, SØREN AABYE (1813-55), the greatest of Danish thinkers, was born at Copenhagen. His literary activity is divisible into two periods. In

the first (1843-6) he was principally concerned with the nature of religion and man's relation to it; and in the second (1849-55) he waged war upon religion as exemplified in the national Danish Church. His most important books of the earlier period are entitled *Enten-Eller* (i.e. *Either-Or*, 1843) and *Stadier paa Livets Ven* (i.e. *Stages of Life*, 1845). In these and in other works he discusses the 'real values' of the aesthetic, the ethical, and the religious conceptions of life. These two books were supplemented and completed by the *Frygt og Beven* (1843), *Gjentagelsen* (1843), *Begrebet Angest* (1844), *Afsluttende videnskabelig Efterskrift* (1846), *Indøvelse i Christendom* (1850). An edition of his *Collected Works* was begun at Copenhagen in 1901. See Höffding's *Søren Kierkegaard som Filosof* (1892; German trans. 1902); Bærtold's various books (1875-86); Georg Brandes's *S. Kierkegaard* (1879); and H. Lund's *Mit [Kierkegaard's] Forhold til Hende* (1904).

Kieselguhr, or DIATOMITE, a fine-grained, gray or brownish, friable, porous, infusorial earth, consisting of the siliceous frustules of diatoms. It is a deposit of fresh-water lakes. It is found in Aberdeenshire and in Skye, in Switzerland, Germany, and Sweden, also in N. America. Formerly it was largely obtained from Tripoli, and was hence known as tripoli powder. Kieselguhr serves largely as a polishing powder for steel and other metals, as an ingredient in certain gritty soaps, and as a non-conducting fireproof packing for boilers and steam-pipes. It forms the absorptive medium of dynamite.

Kiev, or KIEFF. (1.) Government of S.W. Russia, with an area of 19,670 sq. m., and a pop. of 4,450,000. The country is undulating, and much of the land is 'black earth,' though towards

the s. poorer and more sandy steppe-lands occur. The Dnieper borders or traverses the province from N.N.W. to S.E. The chief crops are cereals, sugar-beets, and potatoes. Its sugar manufacture ranks first in all Russia; then come distilleries, cloth, candles, soap, agricultural implements, and tobacco industries, tanneries, iron foundries, brick works, and paper mills. The chief minerals are iron, lignite, graphite, marble, and granite. Little Russians form the majority of the population. Jews amount to fully ten per cent. (2.) Chief tn. of above gov. and of all Little Russia, on r. (W.) bk. of Dnieper, 660 m. s. of St. Petersburg. Most of the antiquities of Kiev are in the old town. The most famous building is the Pecherskoi monastery, said to have been founded by St. Anthony in the 9th century. Every year from 200,000 to 350,000 pilgrims visit this greatest centre of Russian devotion. The Podol, once the exclusively mercantile quarter of Kiev, lies between the Pechersk quarter and the river. The university (over 4,000 students) was founded by Nicholas I. in 1834. There are also an academy of theology (1631), a cadet school, and a technical school. According to the Russian annals, Askold and Dir, followers of Rurik, took Kiev from the Khazars about 882. Here Christianity was preached by St. Vladimir in 988. From that time Kiev was one of the principal towns in Russia. The Mongol storm of 1239, however, ruined it. In 1320 it fell into the hands of the Lithuanians, and from 1386 belonged to the Polo-Lithuanian kingdom. In 1667 it was seized by Moscow. Pop. 320,000. See Mukalov's *Géographie du Gouvernement de Kiev* (1888); Zakrevski's *Opisanie Kieva* (1868); Tarasovski's *The Town of Kiev* (1881); and De

Baye's *Kiev, la Mère des Villes Russes* (1896).

Kikuyu, or **KENIA**, dist. of British E. Africa, in Ukamba prov., bordering Uganda on the w. It includes Mt. Kenia, and, ranging in elevation between 4,500 and 18,600 ft., enjoys a climate as temperate as that of Europe. Estimated pop. 323,000.

Kilakarai, seapt. tn., Madura dist., Madras, India, on the Gulf of Manaar, 120 m. S.S.W. of Negapatam. Pop. 11,000.

Kilauea, volcanic crater in the S.E. of Hawaii, on the E. slope of Mauna Loa. It is about 4,400 ft. high, and has a circumference of from 8 to 9 m.

Kilbarchan, par. and tn., Renfrewshire, Scotland, 5 m. w. by s. of Paisley; has shawl weaving, calico printing, and papermaking. Pop. (1911) par. 7,491.

Kilbirnie, tn., Ayrshire, Scotland, 20 m. N. by w. of Ayr. The industries are flax-spinning, iron and steel works, and the manufacture of linen thread. Pop. (1911) 7,618.

Kilbowie. See **CLYDEBANK**.

Kilbride. (1.) **EAST**, par. and tn., Lanarkshire, Scotland, 6 m. s. of Glasgow; coal and lime are worked. Pop. (1911) 3,977. (2.) **WEST**, par. and tn., Ayrshire, Scotland, 5 m. N.N.W. of Ardrossan. Pop. (1911) 3,164.

Kilburn, dist. of N.W. London, in the met. bor. of Hampstead.

Kildare. (1.) Inland co., prov. Leinster, Ireland, with Dublin and Wicklow on the E. Part of the north-west belongs to the Bog of Allen; much of the surface is flat or slightly undulating. The principal rivers are the Liffey, the Boyne, and the Barrow. The Royal and the Grand Canal cross the county. In the centre is the plain of the Curragh. Agriculture is the chief employment. The county returns two members to Parliament. Area, 654 sq. m. Pop. (1911)



Kilima-Njaro (Mawenzi) from the south-west.
(From Negret's 'First Account of Kilima-Njaro,' by permission of Messrs. G. Philip & Son.)

66,498. (2.) Market town and (Anglican) episc. see, cap. of above co., 32 m. w.s.w. of Dublin. The cathedral dates from the 13th century. There are remains of a castle and a Carmelite friary, both of the 13th century. Pop. 1,600.

Kilia, or **KILIYA**, tn., Bessarabia, S.W. Russia, 25 m. E.N.E. of Ismail city, on the Kilia branch of the Danube delta; has flour mills. Pop. 12,000.

Kilian, ST. (c. 644 - 697), the apostle of Franconia and bishop of Würzburg in the 7th century; was one of the Irish missionary-monks who Christianized Western and Central Europe. He converted the Thuringians, but was beheaded in Würzburg.

Kilimane. See **QUILIMANE**.

Kilima-Njaro, mountain mass just inside the N. frontier of German E. Africa, 175 m. from the coast; covering 45 m. from N. to S. by 40 m. from E. to w., and culminating in the two peaks Kibo (19,720 ft.) and Kimawenzi (17,570 ft.). Both are craters of extinct volcanoes, and both are snow-capped down to about 15,000 feet. See Johnston's *An Expedition to Kilimanjaro* (1893).

Kilindini, port of Mombasa, British E. Africa Protectorate.

Kilkee, fashionable wat.-pl., s.w. Co. Clare, Ireland, 8 m. w.N.w. of Kilrush; in the vicinity are chalybeate spas. Pop. 1,700.

Kilkheel, par. and seapt. tn., s. Co. Down, Ireland, 23 m. s.s.w. of Downpatrick; a rising watering-place. Pop. (par.) 11,000.

Kilkenny. (1.) County, prov. Leinster, Ireland. The surface is in great part flat, with numerous low isolated hills. The county is drained to Waterford harbour by the Barrow, Nore, and Suir. Agriculture is the chief occupation. Flour, whisky, and beer are manufactured. Coal (anthracite) is mined and black marble is quarried. Iron, manganese,

and copper also occur. The county returns three members to Parliament. Kilkenny is rich in antiquities. Area, 792 sq. m. Pop. (1911) 74,821. (2.) City, parl. and co. bor., cap. of Co. Kilkenny, on the Nore, 73 m. s.w. of Dublin. The cathedral of St. Canice was founded in the 13th century. The Tholsel (market house) has a curious cupola. At the grammar school (1684), Swift, Congreve, and George Berkeley were educated. The name 'City of the Confederation' is derived from a rebel Catholic Parliament which assembled here in 1642. The city was taken by Cromwell in 1650. Its industries include blankets and coarse woollen and linen cloths. There are large marble works near the town, and an important provision trade through Waterford. Pop. (1911) 10,513.

Killaloe, par. and tn., Co. Clare, Ireland, on the Shannon, 12 m. N.E. of Limerick. The cathedral dates from 1160. The town was the capital of the O'Briens, kings of Munster. To the N. are slate quarries. Pop. 900.

Killarney. (1.) Market tn., Co. Kerry, Ireland, 20 m. S.E. of Tralee. It is the tourist centre for the lakes. The Roman Catholic cathedral is a handsome modern building. At Aghadoe, 2½ m. w.N.w., are remains of a curious old church, formerly the seat of a bishop, and near it are ruins of a round tower and a castle. Pop. 5,600. (2.) LAKES OF, group of three connected lakes in Co. Kerry, Ireland, famous for the beauty of their scenery. Lower Lake or Lough Leane, the largest, 5½ m. long, is set in greenery and framed about with mountains, including Macgillicuddy's Reeks. The lake is drained to Dingle Bay by the Leane or Laune. It contains some richly-wooded islands, including Ross and Innisfallen, the former with a pictur-

esque castle (an old fortress of the O'Donoghues), the latter containing slight vestiges of the abbey in which was compiled the *Annals of Innisfallen*. Middle or Muckross Lake (680 ac.) is separated from Lough Leane by Muckross Peninsula (on which are the remains of Muckross Abbey). Near the N. shore rises Torc Mt., and farther north Mangerton (2,756 ft.), with a deep tarn called the Devil's Punch Bowl. A winding channel, 2½ m. long, connects Muckross with the Upper Lake (430 ac.), about five feet higher. It has several islands, and is almost entirely enclosed by lofty mountains. The Gap of Dunloe is a wild pass, 4 m. long, between Purple and Tomies Mts. on the E. and the Reeks on the w. (3.) Town, Manitoba, on the Canadian Pacific Railway, 125 m. w.s.w. of Winnipeg. Pop. 1,200.

Killiecrankie, PASS OF, Perthshire, Scotland, in the valley of the Garry, 3 m. s.e. of Blair Atholl. The N. end of the pass was the scene of the battle fought between Claverhouse and Mackay on July 27, 1689. The Highland Railway, constructed in 1863, runs beside the river.

Killigrew, THOMAS (1612-83), English dramatist, born in London, son of Sir Robert Killigrew, became page to Charles I. (1633), and the companion of Charles II. in exile. He was British resident at Venice (1651), and groom of the bedchamber and queen's chamberlain, after the restoration. Proprietor of a playhouse, he also was master of the revels. A collected edition of his works appeared in 1664.

Killigrew, SIR WILLIAM (1606-95), English dramatist, elder brother of Thomas Killigrew, was gentleman-usher to Charles I., and suffered for his adherence to the royal cause. Of his plays, *Pandora*, *Selindra*, *Ormasdes*, and *The Siege of Urbin* are the best

known. He was ruined by unsuccessful attempts to drain the Lincolnshire fens.

Killingly, tn., Windham co., Connecticut, U.S.A., 25 m. E. of Providence. Pop. (1910) 6,584.

Killingworth, eccles. par. and vil., Northumberland, England, 5 m. N.N.E. of Newcastle; has extensive coal mines. Pop. 8,500.

Killiz, or **KILLS**, tn., Turkey in Asia, vilayet of and 35 m. N. of Aleppo; produces very fine oil. Pop. 20,000.

Killyleagh, par. and seapt. tn., Co. Down, Ireland, on Strangford Lough, 6 m. N.N.E. of Downpatrick. Sir Hans Sloane, founder of the British Museum, was a native. Linen is manufactured. Pop. 4,000.

Kilmainham, tn., Co. Dublin, Ireland, incorporated with the city of Dublin (1900). It contains the official residence of the commander-in-chief of the forces in Ireland, a royal military hospital, and the court house. It is noteworthy as the scene of the so-called 'Kilmainham Treaty of 1882,' said to have been made between Mr. Gladstone and Mr. Parnell, who was then imprisoned in the jail. Pop. 6,000.

Kilmarnock, bur., Ayrshire, Scotland, on the Irvine and Kilmarnock waters, 12 m. N.N.E. of Ayr. Its industries are tweeds, carpets, and shoemaking, but the chief works are engineering shops and foundries. With Dumbarton, Port Glasgow, and Renfrew and Rutherglen, it returns one member to Parliament. Pop. (1911) 34,729.

Klin. See CEMENT, LIME, POTTERY.

Kilogram. See METRIC SYSTEM.

Kilpatrick. (1.) **OLD or WEST**, par. and vil., Dumbartonshire, Scotland, 10 m. N.W. of Glasgow, is supposed to be the birthplace of St. Patrick (387-458). Pop. (1911) par. 45,345. (2.) **New** or

EAST, or BEARSDEN, par., Dumbartonshire, Scotland, 5 m. N.W. of Glasgow. Pop. (1911) 13,798.

Kilrush, par. and seapt., Co. Clare, Ireland, on the northern shore of the Shannon estuary, 25 m. S.W. of Ennis. It has slate quarries and fisheries. Pop. 4,200.

Kilsyth, pol. bur. and par., Stirlingshire, Scotland, 12 m. N.E. of Glasgow, has manufactures of cotton. There are coal and iron mines, and whinstone and freestone are quarried. Pop. (1911) bur. 8,106; par. 11,053.

Kilt. See HIGHLAND DRESS.

Kilwa-Kisiwani, or QUILOA, seapt., German E. Africa, on an island 150 m. s. by E. of Dar-es-Salaam. The town and sultunate date from about 975 A.D. In 1505 it was stormed by the Portuguese. Pop. 600.

Kilwa-Kivinje, seapt. of German E. Africa, 140 m. s. of Dar-es-Salaam. Pop. 8,000.

Kilwinning, bur. and par., Ayrshire, Scotland, 25 m. S.W. of Glasgow, with engineering, iron smelting and founding, coal-mining, and worsted-spinning industries. It is the traditional birthplace of freemasonry in Scotland. Eglinton Castle, the scene of the famous Eglinton tournament in 1839, lies 1½ m. S.E. Pop. (1911) bur. 4,945; par. 8,411.

Kimberley. (1.) Chief town and diamond-mining centre of Griqualand West, Cape of Good Hope, 646 m. by rail N.E. of Cape Town, and 914 m. S.W. of Bulawayo. Alt. 4,000 ft. It was named after the late Lord Kimberley, colonial secretary (1870-4), and was formerly known as Colesberg Kopje and New Rush. Pop. 35,000 (14,000 whites). In 1867 an ostrich hunter, named O'Reilly, came upon some diamonds which had been found on the banks of the Vaal. Two years later the 'Star of South Africa,' valued at £11,000, was found, and within four years ten

thousand diggers were turning up the working in the wet or alluvial diggings along the banks of the river. Finally, the matrix of the diamonds was discovered in pipes or funnels of unknown depth, probably the craters of ancient volcanoes. The surface of the diamond-bearing country is red sand, and below is a deposit of lime. Then comes the 'blue ground,' or diamond-bearing earth. The output is regulated by the De Beers Company, and has averaged over £4,500,000 annually. In 1905 it amounted to £5,472,690, but in 1908 to £2,685,150 only, owing to the limitation of the output. The white employés occupy the model village of Kenilworth. The mining is done by natives. The chief mines are the Kimberley Mine, De Beers Mine, Bultfontein, Du Toit's Pan. (See DIAMOND.) The influence of the diamond mines on South African history has been immense. On Oct. 15, 1899, Kimberley was besieged by the Boers, and was not relieved until Feb. 16, 1900. The tn. of Beaconsfield (pop. 10,000), containing the Bultfontein Mine and Du Toit's Pan, lies 2 m. S.W. of Kimberley. (2.) Gold field, Kimberley div., W. Australia, 300 m. E. by S. of Derby. The first gold was discovered in 1882. It covers an area of 47,000 sq. m. (3.) Par. and tn., England, in co. of and 6 m. N.W. of Nottingham. The industries include brewing, malting, and coal-mining. Pop. 5,200.

Kimberley, JOHN WODEHOUSE, FIRST EARL OF (1826-1902), British statesman; held office under Aberdeen, Palmerston, Gladstone, and Rosebery; and was leader of his party in the Upper House from 1897. He held nearly all the most important portfolios at one time or another, having been Secretary of State for Foreign Affairs (1852-6, 1859-61, 1894-5), Lord-Lieutenant

of Ireland (1864-6), Lord Privy Seal (1868-70), Secretary of State for the Colonies (1870-4, 1880-2), Secretary of State for India (1882-6, 1892-4), Lord President of the Council (1892-4).

Kimchi. DAVID (1160-1235). Jewish grammarian and commentator, was probably born at Narbonne, in S. France, where he lived and died. His grammar (1545) and lexicon (1490) are the basis of all similar subsequent works. He published many Old Testament commentaries, notably one on the Psalms, edited by Schiller-Szinessy (1885).

Kimmeridge Clay, a subdivision of the Jurassic system, a member of the Upper Oolitic series. As typically developed in the south of England, it is a dark bluish-gray clay, which is often bituminous, and in the Isle of Purbeck contains oil shales that are combustible. Often the clay is more or less sandy, and it may contain large concretionary, septarian nodules. The whole formation is from 100 to 500 ft. thick, and is well developed in Yorkshire and in Dorsetshire, but much thinner in Oxfordshire. In Lincolnshire it is often full of large calcareous lumps or 'doggers,' which weather out prominently.

Kimpolung. (1.) Tn., Austria, in Bukovina, 56 m. s.s.w. of Czernowitz. Pop. (1911) 9,254. (2.) See CAMPULUNG.

Kin, NEXT OF. According to Roman law, which is now adopted both by English and Scottish law, the next of kin are the nearest relatives of a deceased person, no distinction being made between paternal and maternal relatives, or between whole and half blood. The relationship is reckoned by degrees—i.e. parent and child are one degree, grandparents and brothers and sisters are two degrees, uncles or aunts three degrees, and first cousins

four degrees. In each case the reckoning is to the common ancestor and then down. The Statutes of Distribution created an artificial class, who are termed next of kin, but only for purposes of intestate succession to personal estate. A husband is not next of kin to his wife, or *vice versa*. Canon law reckons the degree of kinship between collaterals by counting the number of generations between the person farthest removed from the common ancestor and that ancestor: thus, first cousins are in the second degree, a great-uncle in the third degree. For this reason canon law forbids marriages between first cousins.

Kinabalu. See BORNEO.

Kinburn, old fortress in Taurida gov., S. Russia, on the sandbank which separates the liman or estuary of the Dnieper from the Black Sea. Originally Turkish, it was ceded to Russia by the peace of Kuchuk-Kainardji in 1774; bombarded by the English and French fleets in 1855, and abandoned in 1860.

Kincardine, or PENETANGORE, tn. and port on Lake Huron, Bruce co., Ontario, Canada, 115 m. w.n.w. of Toronto. Pop. 2,000.

Kincardineshire, or THE MEARNS, maritime co., Scotland, on E. coast, between Aberdeenshire and Forfarshire. The W. and middle are occupied by the Grampians, while the N. belongs to the valley of the Dee, and the S.W. to the Howe of Mearns. The county is watered by the Dee, North Esk, and Bervie. Oats, barley, and wheat are the principal crops, while on the coast there is a fishing industry. Stonehaven is the capital. Area, 383 sq. m. The county returns one member to Parliament. Pop. (1911) 41,007.

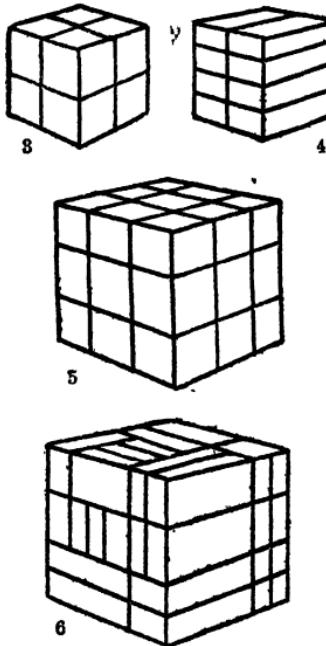
Kinchinjunga. See KANCHANJANGA.

Kin-chow, tn., Manchuria, near the N. shore of the Gulf of

Jiaotung, on the railway between Harbin and Peking. Pop. 25,000.

Kindergarten. The word kindergarten is to be found in Jean Paul Richter, but the name and he thing alike, as we know them, originated with Friedrich Froebel, who in 1837 established at Blankenburg, in Central Germany, the first kindergarten. The system is based upon a metaphor. The school is the garden, the children are the plants. This metaphor of the plant is very prominent in Pestalozzi's theories, and is accepted by Froebel. The keynote of the kindergarten system is self-activity on the part of the pupil. The teacher is to be a benevolent superintendent, who studies child nature, and contents himself with aiding that nature to develop itself. This is the principle that underlies the very elaborate system of gifts and occupations that forms such a prominent part of the Froebelian scheme. The six Froebelian 'gifts' are as follows: (1) Six balls of coloured worsted, presenting the primary and secondary colours. (2) A wooden sphere, cylinder, and cube. (3, 5, and 6) Each consists of a large wooden cube divided up in various ways: for example, in the third gift the cube is divided into eight smaller cubes; in the remaining gifts the subdivision is carried further, and the parts include square, rectangular, and triangular prisms, as well as cubes. A great deal of ingenuity is shown by kindergartners in inventing games in which these gifts are utilized. In the first two gifts the work is mainly perceptual (*anschaulich*). In the remaining four there is an increasing opportunity for the exercise of self-activity. In the earlier gifts the work is mainly, in Froebelian phrase, making the outer inner, while in the later gifts the process is mainly making

the inner outer. With the small cubes and prisms the child is encouraged to make new combinations. These combinations fall into three classes: (1) forms of beauty—that is, those that are pleasing to the eye from symmetry



Froebel's divided Cubes (Gifts 3, 4, 5, and 6).

and just proportion; (2) forms of knowledge, illustrating such matters as number and ratio; (3) forms of life, representing real objects, such as a train, a house, grandfather's chair. The gifts really illustrate what is best in the Froebelian theory, but there are many 'occupations' which, though of less educational value, are much more popular with teachers. These include such things as beadwork, stick-laying, laths, sewing, paper-fold-

ing, paper-cutting, mat-plaiting, brushwork. Games and stories form an important part of the kindergarten system. Their main purpose is to encourage self-expression—to make the inner outer. There is a danger of this recreative side being overcultivated. Froebel himself probably attached too much importance to games, but not on their purely recreative side. The influence of German idealism and mysticism becomes manifest in the symbolism that he attached to games. In his *Mutter- und Kose-Lieder*, a book of songs, games, and stories for the use of mothers, he attaches undue importance to the moral aspects of certain motions and games: for example, he objects to the game of hide and seek, on the ground that it teaches deception.

While the kindergarten system has been received with favour in practically all civilized countries, there is everywhere a difficulty in fitting it into the national system of education. For this the chief cause is the cost of applying the system satisfactorily. A kindergarten requires highly-trained teachers, somewhat costly premises and apparatus, and small classes. The better organized kindergarten schools recognize the difficulty of correlating their work with that of the ordinary school, and provide a transition class, in which pupils are weaned from purely kindergarten methods, and are prepared for those of the ordinary schools. If to this could be added the adoption of the kindergarten spirit in the junior classes of an ordinary school, the correlation of the two could probably be effected with the best results.

At present kindergarten methods are very largely adopted in the infant schools and departments under the Board of Education in England and Scotland.

In Germany, Britain, and particularly in the United States, the system is very widely adopted in the training of children of the well-to-do classes. The system was introduced into Britain in 1854, but it was not till twenty years later that it gained a firm footing. In 1874 the first lecturer on the kindergarten system was appointed by the London School Board. A kindergarten training college was established by the British and Foreign School Society at Stockwell, London, and the Froebel Society was founded. In 1887 the National Froebel Union was established, consisting of representatives of the Froebel Society, the Bedford Kindergarten Company, and the Home and Colonial School Society. The examinations conducted by this union have done much to raise the standard of training among kindergarten teachers, and to gain for the system the favour it now enjoys in this country. See Mary J. Lyschinska's *The Kindergarten Principle* (1880); Emily Shirreffs' *The Kindergarten* (new ed. 1897), and several other books; Kate Douglas Wiggins' *The Kindergarten*, and several other books; H. Courthope Bowen's *Froebel and Education by Self-activity* (1893); William H. Herford's *The Student's Froebel* (1893); Bertha Marenholz-Bilow's *The Child and Child Nature* (1879); the Reports of the Froebel Society, and its organ, *Child Life*.

Kinder Scout, the highest summit in the Peak dist. N.W. Derbyshire, England; 2,088 ft.

Kinderscout Grit, a series of coarse gritty sandstones, from 500 to 1,000 feet in thickness, belonging to the lower part of the Millstone Grit of Yorkshire and Derbyshire. In Britain it forms many bold escarpments, and underlies the high table-land of Kinderscout. Between Wigan and Burnley, in Lancashire, a broad

tract of moorland ground is composed of these rocks.

Kinemacolor. See PHOTOGRAPHY.

Kinematics, a preliminary department of dynamics, in which the geometrical properties of motion are considered independent of the mass of the moving matter, or of the forces associated with the motion. It is, in fact, an extension of geometry in which the element of time is introduced. Displacement, linear or angular, is a purely geometrical conception. When, however, we introduce the notion of time, we pass to velocity, linear or angular, and the question becomes a kinematical one. It is usual to preface modern treatises on dynamics with chapters on the kinematics of a moving point, a moving plane figure, and a moving rigid solid. The transition to the corresponding dynamic problems is at once effected by introducing mass as a factor. The case of the motion of a plane figure parallel to its own plane forms an important subdivision called uniplanar kinematics; and a little consideration of the moving parts of an ordinary engine will show how peculiarly important this department is in practical applications.

In uniplanar kinematics there is a fundamental theorem which asserts that any displacement of a plane figure in its plane may be effected by a rotation about a definite point: when the displacement is a pure translation, the point about which rotation takes place passes to infinity. For a body in continuous motion parallel to a plane, the motion at any instant may be represented by rotation about a point which is called the instantaneous centre of rotation. For example, in the case of a wheel rolling along the ground the instantaneous centre of rotation is always the point of contact of the wheel and the ground.

A corresponding theorem, more remarkable even, holds true in the case of a rigid body which has one point fixed. Any displacement of such a body may be effected by a rotation about a particular axis. Hence the continuous motion of a rigid body with one point fixed can be represented at every instant by a rotation about an axis. This axis is the instantaneous axis of rotation. The points of the body momentarily coincident with it are at rest. Thus, however complicated may be the motion of a rigid body with one point fixed, there is at every instant a row of particles at rest. This theorem may be illustrated by means of a spinning top.

If the rigid body is perfectly free, then clearly the motion may be regarded as compounded of a translation and a rotation; and in every such case it is possible to represent the motion as consisting of a rotation round a definite axis, and translatory motion parallel to this axis. This is a screw motion. Thus, however complicated the motion of a rigid body may be, there is always at every instant a particular line in the body which is sliding along itself. This line forms the momentary axis of screw.

The kinematics of deformable figures forms a somewhat difficult branch of the subject, and is a necessary introduction to the motion of fluids, and to stress and strain in solids. (See ELASTICITY and HYDROKINETICS.) The simplest kind of deformation is that in which straight lines remain straight lines, and planes remain planes. The angles between sets of lines or of planes may, however, be changed. This is a homogeneous strain, and whatever be its character in detail, there is always one line which has not changed direc-

tion. Thus, in a substance undergoing deformation of this simplest character, there is at every instant a set of parallel lines which are not changing direction. See also VORTEX for a special type of fluid kinematics. See M'Cord's *Kinematics* (1883), M'Gregor's *Kinematics* (1887), and Ziwei's *Kinematics* (1893).

Kineshma, tn. and riv. port, Kostroma gov., Central Russia, 57 m. s.e. of Kostroma city, on the Volga. Pop. 8,000.

Kinetics, the branch of applied mathematics which treats of the motions of material configurations, or, to speak more logically, of the motions of masses, where by mass we mean that abstract quantity which may be regarded as symbolizing a material body. The general division of the subject is discussed under DYNAMICS. Here we shall indicate a few of the great lines of development of the kinetics of the universe. The first to formulate a complete theory of kinetics was Newton. Previous to his work astronomy was kinematical, Kepler's laws of planetary motion being purely empirical, and based upon numerical comparisons involving only space and time. The Newtonian law of gravitation, on the other hand, involves the recognition of inertia, which is a property of matter, distinct from space and time. It is certainly remarkable that the motions of comets, planets, satellites, and double stars should all be co-ordinated in terms of one common attribute of all kinds of material things. During the 18th century laws almost identical in form with that of gravitation were found to hold for electrical and magnetic actions; and during the 19th century kinetic theory has gradually permeated every department of physical science. Apart from the far-reaching problems of attraction,

the most important lines of development are the investigation of vibratory and wave motion in systems of connected particles, and the discussion of the properties of crowds of small, quick-moving particles practically free from one another. The latter constitutes the so-called kinetic theory of gases, by means of which purely kinetic expressions are found for the temperature and pressure of a gas. In this theory nothing is assumed except mass, momentum, and kinetic energy, and the conservation of all three. Attempts have been made, but not, so far, with any great measure of success, to deduce, as a mathematical consequence, from these assumptions only as applied to the ultimate atoms which constitute the universe the whole variety of physical properties as we recognize them in the external world. It is not easy to see how the mutual bombardment of particles of different sizes can bring about a sufficient stability of configuration to ensure steady periodic fluctuations about this configuration of stability. In all investigations in vibratory and wave motion such a configuration is necessarily assumed, and with it a law of force acting on any chosen part. The forces may be mechanical, as in the case of elastic bodies; or they may be electrical and magnetic, as in Maxwell's great theory which makes light electrical. In all these cases the mere act of radiation in the form of wave motion through an ethereal medium will produce a mechanical force upon a body placed in the medium. This force is a repulsion from the radiating body. The amount of repulsion acting in this way upon the earth because of the solar radiation is very small compared to the gravitational attraction; but it can be shown that a small enough sphere in the position of the earth

would experience a radiation repulsion comparable to, and even greater than, the attraction of gravitation. This gives a possible explanation of the manner in which comets' tails are, as it were, driven away from the sun.

The whole present trend of physical speculation is to regard the phenomena of nature as due to the interplay of moving particles of different kinds. Some of these are purely material, others are electrically charged particles; there is now, however, a tendency to regard all mass as electrical. (See ELECTRON.) It seems to be necessary, however, to assume positional forces acting between pairs of these numerous corpuscles or atoms. Kelvin at least has stated that there is no escape from the interatomic Boscovichian forces. This is a virtual admission that a thorough-going kinetic theory of the universe is impossible. See Gross's *Kinematics and Kinetics* (1884), and Ziwe's *Kinetics* (1894).

Kinetoscope. See CINEMATOGRAPH.

King and Kingship. See SOVEREIGNTY.

King. (1.) An isl. in Bass Strait, 55 m. from the N.W. point of Tasmania. Area, 400 sq. m. (2.) Or SPRINGHILL, vil., York co., Ontario, Canada, 20 m. N. of Toronto. Pop. 6,000.

King, Edward (1829-1910), bishop of Lincoln, was born at Westminster and educated at Oriel College, Oxford. From 1858 to 1873 he was a lecturer in Cuddesdon College. At the end of that period he returned to Oxford, Mr. Gladstone having promoted him to the chair of pastoral theology. In the university he became not only a powerful teacher, but a recognized leader of the extreme church party. In 1885 Mr. Gladstone recommended him for the see of Lincoln. His tenure of the office lasted for

twenty-five years, and was made specially memorable by his trial by Archbishop Benson, at the instance of the Church Association, on a charge of engaging in ritualist practices.

King, Henry (1592-1669), English poet and divine, son of John King, bishop of London, was educated at Westminster and Christ Church, Oxford. He took orders, became a prebendary of St. Paul's in 1616, and archdeacon of Chester in 1617. In the same year he married Anne Berkeley, who died about 1624. In 1624 he was made canon of Christ Church, in 1639 dean of Rochester, and in 1642 bishop of Chichester. He was a friend of Donne and of Izaak Walton, printed an occasional sermon, and wrote an occasional copy of elegant verses, in Latin or in English. In 1643 he lost the estates of his see, but in 1660 he returned to Chichester. See *Poems, Elegies, Paradoxes, and Sonnets* (1657, 1664), in 1700 ascribed to Ben Jonson; *The Psalms of David* (1651, 1654, 1671). His religious verse was edited by J. Hannah (1843), with bibliography.

King, Sir Richard (1730-1806), English admiral, born at Gosport; saw active service in the E. Indies, and at the reduction of Geriah and Calcutta (1757). He was in command of the *Argo* at the reduction of Manilla, where he captured a Spanish galleon of the estimated value of three million dollars. Then he took part in all the actions with De Suffren in 1782 and 1783. He was promoted to be admiral in 1795.

King, William Rufus (1786-1853), American statesman, born in N. Carolina; became a secretary of legation in Europe (1816-18), and subsequently helped to frame the constitution of Alabama. King was elected member of Senate (1819), was minister to France (1844), governor of Ala-

bama (1848), president of Senate (1850), and vice-president of the United States (1862).

King Alfred, a British armoured cruiser of 14,100 tons and 23 knots, launched at Barrow in 1901.

King-bird (*Tyrannus pipiri*), an American passerine bird belonging to the family of the tyrants, remarkable for its power of flight and bold black-and-white coloration. The male has a flame-coloured crest.

King Charles's South Land, isl., Tierra del Fuego, S. America. It is generally low and level, but in the w. reaches 6,910 ft. in Mt. Sarmiento.

King-crab (*Limulus*), an interesting marine arthropod closely allied to the spiders. There are several species, which live in shallow water on both sides of the Pacific Ocean, and off the eastern coast of America. The body is semicircular, with a long spikelike tail. Anteriorly there is a large vaulted cephalothoracic shield, which is hinged to the pentagonal and unsegmented abdomen, while this in turn has a movable articulation with the spine. The under surface of the cephalothorax bears six pairs of appendages, an anterior pair of forceps or chelicerae, and five pairs of walking legs. The walking legs send inwards large processess used in mastication, and, except the last, usually end in forceps; the last bears flattened blades used in digging. On the under surface of the abdomen are at each side a genital operculum, overlapping the other appendages, and five plates bearing the peculiar breathing organs which are known as gill-books. The diet consists chiefly of worms and molluscs. The mouth lies beneath the chelicerae, and is surrounded by the masticating plates of the legs. On the dor-

sal surface of the cephalothorax there are four eyes, and internally the organs seem generally to resemble those of the scorpion. The king-crab is probably related to the arachnids. There are not a few fossil representatives in Tertiary and Secondary rocks, and such Palaeozoic forms as Belinurus are probably also related. Less closely connected are the fossil eurypterids and trilobites. The living king-crab and its fossil allies are usually placed in the order Xiphosura, which is sometimes appended to Arachnida, or with eurypterids and trilobites constitutes the class Paleostraca. The larval Limulus recalls the fossil Belinurus in the segmentation of the abdomen, and superficially somewhat resembles a trilobite. The eggs are laid in the mud in shallow water during the summer, and the development is best known in the N. American *L. polyphemus*. This animal has recently attracted considerable attention, as Dr. Gaskell and others regard it as the nearest living representative of the ancestors of the vertebrates. See Dr. Gaskell's 'Origin of the Vertebrates' in the *Proc. of the Linnean Society* (1910).

King Edward VII., British first-class battleship, launched at Devonport in 1903, the type of the *King Edward* class, of which eight ships have been built—the *King Edward VII.*, *Dominion*, *Commonwealth*, *Hindustan* (1903), *New Zealand* (1904), *Britannia*, *Hibernia*, and *Africa* (1905). Their displacement is 16,350 tons; I.H.P., 18,000; speed, 18½ knots; and the armament includes four 12-in., four 9½-in., ten 6-in. guns, and four torpedo tubes.

King Edward VII. Land, in the Antarctic, E. of Victoria Land, in about 76° S. and 153° W.

Kingfishers, birds forming the family Alcedinidae of the Coraci-

formes, or 'raven-like' birds. The colouring is, as a rule, brilliant. The head is large in proportion to the body, the bill long and stout, the wings, though powerful, are short and rounded, and the tail is also usually short. The British kingfisher falls into the sub-family of water-kingfishers, which feed upon fish and haunt shady streams; but the wood-kingfishers—e.g. the 'laughing jackass' of Australia—are not piscivorous, but feed upon insects, frogs, reptiles, and even small birds and mammals. In the water-kingfishers the eggs are laid at the end of tunnels excavated in the banks of streams or lakes, but the wood-kingfishers lay theirs in holes in trees. Kingfishers are virtually cosmopolitan, but there are few in America, while they are specially abundant in the E. Indian Archipelago. As examples of wood-kingfishers may be mentioned the beautiful racquet-tailed kingfisher (*Tanysiptera dea*) of the Malay region, with its contrasting tints of bright blue and white; the 'laughing jackass' (*Dacelo gigas*) of Australia; and the red and blue *Carcineutes pulchellus* of the Malay region. Water-kingfishers are exemplified by *Alcedo ispida* of Britain and Europe generally, and *Ceryle alcyon*, the belted kingfisher of N. America. The bright feathers of the British kingfisher are used in making artificial flies. The head, a stripe on the cheek, and the wings and tail are dark blue, slightly mottled, the back paler blue, the throat white, and the under surface, together with a cheek band, chestnut. The bill is black with an orange base, and the feet reddish. The female is slightly duller than her mate.

King George Sound, inlet, Plantagenet co., Western Australia; fortified. On it is the city and port of Albany.

Kinghorn, royal bur. and seaside resort, with golf links, Fifeshire, Scotland, 3 m. s. by w. of Kirkcaldy. In 1286 Alexander III. fell over the cliffs near Kinghorn and was killed. Kinghorn Ness is strongly fortified. Pop. (1911) 1,549.

Kinglake, ALEXANDER WILLIAM (1809-91), English historian, born at Taunton. About 1835 he made an extended tour in the East, which he described in *Eothén* (1844). He was a friend of Lord Raglan's, and from his papers prepared *The Invasion of the Crimea* (8 vols. 1863-87), a valuable though somewhat biased work.

Kingo, THOMAS (1634-1703), Danish hymn-writer, became bishop of Funen (1677). The first part of his famous *Aandelige Sjungekor* appeared in 1674, the second part in 1681. They did much to develop the Danish language, and are full of fire and inspiration. *Psalmer og Aandelige Sange* (1827) is the best edition. See Petersen's *T. Kingo og hans Samtid* (1887).

King-of-Arms, the title of the highest grade of official of the College of Arms in England and the Lyon Court in Scotland. See HERALD.

King Paradise Bird. See BIRD OF PARADISE.

Kings, THE FIRST AND SECOND BOOKS OF, were originally one book. In the Hebrew canon they are numbered among the so-called Former Prophets; in the Septuagint they appear respectively as 3 and 4 Kings. They narrate the history of Israel from the death of David till the dissolution of the southern kingdom (Judah) in 586 B.C., and thus cover a period of some four hundred years. The several reigns may be arranged in three great groups—(1) the undivided monarchy under Solomon (1 Kings 1-11); (2) the separate kingdoms, Judah and Israel,

till the destruction of the latter in 722 B.C. (1 Kings 12-2 Kings 17); and (3) the later history of Judah till the Babylonian captivity (2 Kings 18-25). The compiler has used various historical documents, and expressly names the 'Acts of Solomon,' the 'Annals of the Kings of Israel,' and the 'Annals of the Kings of Judah' as sources utilized by him. One of his characteristics is the use of stereotyped formulae to introduce and close a particular reign. The general colouring of thought and diction reveals the influence of the writer of Deuteronomy, and the work is not so much history as 'philosophy of history.' The date of composition is generally placed shortly before the captivity of Judah (say 600 B.C.); the concluding sections are by a later hand. See Commentaries by Keil (1865; Eng. trans. 1872), Klostermann (1872), Benzinger (1899), Lumby in *Camb. Bible*, Skinner in *Century Bible*, Haupt's *Sacred Books of the Old Testament* (1904).

King's Bench Division. See SUPREME COURT.

Kingsbridge, mrkt. tn., small port, and par., Devonshire, England. Fishing is engaged in. The climate is very mild. John Wolcot (Peter Pindar, 1738-1819) was a native. Pop. (1911) 3,049.

Kingsburgh, JOHN HAY ATHOLE MACDONALD, LORD (1836), lord justice-clerk of Scotland, and president of the Second Division of the Court of Session (1888), born in Edinburgh; became an advocate in 1859, and took silk in 1880; was solicitor-general for Scotland (1876-80); dean of the Faculty of Advocates (1882-5); and lord advocate (1885-89). He has published a standard *Treatise on the Criminal Law of Scotland* (3rd ed. 1874), and works on electricity and military tactics. It was greatly through his influence that post cards came into use in Great Britain.

Lord Kingsburgh has invented life-saving apparatus and electrical appliances.

Kingsclere, par. and mrkt. tn., Hampshire, England, 8 m. N.W. of Basingstoke. It was a residence of the kings of Wessex. Malting, brewing, and rope-making are carried on. Pop. (1911) rural dist. 8,842.

King's College. See LONDON—*London University*.

King's College, Cambridge. See CAMBRIDGE.

King's Counsel are appointed in England on the recommendation of the lord chancellor; in Scotland, since 1897, on the recommendation of the lord justice-general presented through the secretary for Scotland; in Ireland by the lord-lieutenant on the recommendation of the Irish lord chancellor; in the colonies by the various governors. The patent in England appoints a person 'one of our counsel learned in the law' to take precedence next after the junior K.C. above him. King's counsel may not act as counsel against the crown without special licence. The first Q.C. was Francis Bacon. Till 1831 an allowance of £40 a year and stationery was attached to the office, so that the acceptance of it at that time vacated a seat in Parliament. To avoid this, patents of precedence were established, and the office ceased to be remunerated.

King's County, an inland co. prov. Leinster, Ireland. The N. part is occupied mainly by the Bog of Allen; in the S.W. are the Slieve Bloom Mts., with summits exceeding 1,500 ft. The Shannon borders the county on the w.; a large tract in the N. is drained by the Brosna; and in the w. are affluents of the Boyne and the Barrow. The Grand Canal crosses the county from E. to W. Agriculture employs most of the inhabitants. The county

returns two members to Parliament. The most famous remains are the ruins of the 'Seven Churches' of Clonmacnoise (6th century), of Durrow, and of Seirkieran. Area, 770 sq. m. Pop. (1911) 56,769.

King's Evidence, the evidence of an accomplice to a crime given upon an express or implied promise of pardon. Sometimes a free pardon is offered for evidence by proclamation in the *London Gazette*, but the more common practice is to admit accomplices to give evidence for the crown upon an implicit promise of pardon. The admission of the evidence of an accomplice is in the discretion of the court; but the court usually acts on the application of the counsel for the prosecution, who has considered the facts, and pledges his opinion that the testimony is necessary. As the promise of pardon is only implied, it is usual to direct an acquittal of the accomplice before he gives evidence, so that he may not be influenced by fear. In Scots Law the expression king's evidence is not used, but the public prosecutor has the right to call one *socius criminis* to give evidence against another, and may grant him absolute immunity from prosecution. See **AFFROVER**.

King's Evil, **SCROFULA**, or **STRUMA**, a morbid condition characterized by defective nutrition of the tissues, and often resulting in suppurating glands. Unfavourable hygienic surroundings and insufficient food have much to do with its development in the young. In England, Edward the Confessor was the first to 'touch' for the evil; but the custom was observed in France at a much earlier period. In the English Church Prayer Book of Henry VIII. there was a special 'Healing Service.' Queen Anne was the last to 'touch' for the evil, and among her patients in

1712 was Dr. Samuel Johnson; but even as late as 1745 Prince Charles Edward held a healing service in Edinburgh. See Crawfurd's *The King's Evil* (1911); also **SCROFULA**.

Kingsford, WILLIAM (1819-98), Canadian historian, born in London; went to Canada and became journalist, and was proprietor of the *Montreal Times*. He entered the Department of Public Works, and surveyed for the Lachine Canal, and for the Hudson River, Panama, Grand Trunk, and Canadian Pacific Railways. He wrote *The History of Canada* (10 vols. 1887-97) and *Canadian Archaeology* (1886).

Kingsley, CHARLES (1819-75), English author, born at Holne vicarage, Devonshire. He was for a time at King's College, London; then went to Magdalen College, Cambridge, where (1842) he graduated a first-class in classics and a senior optime in mathematics. In 1844 he was appointed rector of Eversley, Hampshire. He also worked energetically for the Christian socialism of Frederick Denison Maurice. His stories *Yeast* (1848) and *Alton Locke* (1850) illustrate his principles and his views of popular rights. *Hypatia* (1853) displays the writer's doctrines from a historical standpoint, and is charged with his individuality at its best. The same qualities are in the powerful Elizabethan story *Westward Ho!* (1855); *Two Years Ago* (1857), a strong presentation of contemporary life; and *Hereward the Wake* (1866), an entrancing historical novel. *At Last* (1871) is an embodiment of the impressions received during a visit to the West Indies. In 1860 Kingsley became professor of modern history at the University of Cambridge. His revised lectures constitute the volume entitled *Roman and Teuton* (1864). In 1864, with character-

istic impulsiveness, Kingsley assailed Newman in his provocative *What, then, does Dr. Newman Mean?* He thus provoked the composition of the powerful *Apologia pro Vita sua*. He became a canon in Chester cathedral in 1869, exchanging to Westminster Abbey in 1873. From 1835 onwards Kingsley wrote much verse. In 1848 appeared his *Saint's Tragedy*—massive and imposing, but destitute of genuine vitality. A volume of *Poems* was published in 1871; some of the shorter pieces—e.g. *Andromeda*, *Ode to the North-east Wind*, *The Three Fishers*—will endure. His essays will be found in *The Hermits* (1886); *Prose Idylls and Plays and Puritans* (1873); and four volumes of literary, sanitary, scientific, and historical essays, which appeared in 1880. The children's books—*The Heroes* (1856), *The Water-Babies* (1863), *Madam How and Lady Why* (1869)—are distinguished in their kind. The Eversley edition of Kingsley's *Works* appeared in 1881-4, an edition of the novels was issued in 1888-9, and the novels and poems were published in 11 vols. in 1896. See Charles Kingsley's *Letters and Memories*, by Mrs. Kingsley (1877), and *Twenty-five Years of St. Andrews*, by Dr. A. K. H. Boyd (1892).

Charles Kingsley's daughter, MARY ST. LEGER HARRISON, has taken a place in letters under the pseudonym 'Lucas Malet.' Born at Eversley rectory in 1852, she published in 1882 *Mrs. Lorimer, a Sketch in Black and White*, *Colonel Enderby's Wife* (1885), *Little Peter* (1887), and *A Counsel of Perfection* (1888). Her strongest work is *The Wages of Sin* (1891). *The Carissima, a Modern Grotesque*, appeared in 1896, *The Gateless Barrier* in 1900, *History of Sir Richard Calmady* (1901), *The Far Horizon* (1906), and *The Score* (1909).

Kingsley, HENRY (1830-76), younger brother of Charles Kingsley, was in Australia from 1853 to 1858. In 1870-1 he edited the Edinburgh *Daily Review*. Colonial life is depicted in his fresh and vigorous *Geoffrey Hamlyn* (1859). His best novel is *Ravenshoe* (1862). His other novels include *Austin Elliot* (1863), *The Hillyars and the Burtons* (1865), *Silcote of Silcoates* (1867), and *Grange Garden* (1876).

Kingsley, MARY HENRIETTA (1862-1900), English traveller and author, niece of Charles and Henry Kingsley, was born in London. She wrote the racy *Travels in West Africa* (1897), *West African Studies* (1899), and *The Story of West Africa* (in the Empire Series, 1900). She died at Simon's Town, S. Africa.

King's Lynn, LYNN REGIS, or LYNN, munic. and parl. bor. and seapt., Norfolk, England, 38 m. w. by n. of Norwich, on the Great Ouse. In the town hall is preserved an ancient register, known as the 'Red Book of Lynn.' Industries include corn mills, oil and cake mills, breweries, motor carriage, coach, and agricultural implement works, shipbuilding and iron and brass foundries. The fisheries are important. Pop. (1911) 20,205.

Kingsmill Islands. See GILBERT ISLANDS.

King's Norton, par. and tn., Worcestershire, England, adjoins Birmingham; has manufactures of paper, metal, and screw nails. The model village of Bournville, with the cocoa and chocolate works of Cadbury Brothers, Ltd., is situated in the parish. Pop. (1911), with Northfield, 81,163.

King's Printers are appointed by patent for the three kingdoms. The first King's printer was probably Grafton, appointed in 1547. Charles Eyre came into office in 1767, and founded the present firm of Eyre and Spottiswoode,

H.M. Printers, to the members of which the patent has been renewed several times. The patent allows the printers to print all or some of the books in which the crown enjoys copyright. Copies of private acts, proclamations, orders in council, etc., printed by the King's printers, are made *prima facie* evidence of the contents of such documents, by the Official Documents Act, 1845, and the Documentary Evidence Act, 1868.

King's Proctor. Under the Matrimonial Causes Acts, 1860 and 1873, before a decree of divorce, or nullity of marriage, is made absolute (*i.e.* within six months of the decree *nisi*), the king's proctor may, on the information of any person and with the consent of the attorney-general, intervene when he suspects that the parties have been acting in collusion to obtain a divorce, or have been guilty of misconduct in the meantime. He may also intervene on the ground that material facts have not been brought before the court. If the intervention is successful, the decree is rescinded.

King's Regulations. The army and navy are each governed and administered by these regulations, which are issued in volume form. Each officer is supposed to have in his possession a copy of the latest edition of these, and to be thoroughly acquainted with its contents.

King's Remembrancer. See REMEMBRANCER.

Kingsthorpe, par. and vil., England, co. of and 2 m. N. of Northampton. Pop. 14,000.

Kingston. (1.) Seapt. Jamaica, W. Indies, and cap. of the isl., is situated on the s. side in $76^{\circ} 47'$ w. Its harbour admits the largest vessels. Pop. about 50,000. The town was greatly damaged by an earthquake in 1907. Four miles s.w. is the naval station of Port

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Royal, the headquarters of the British naval forces in the W. Indies. (2.) City, prov. Ontario, Canada, occupies the site of Fort Frontenac, at the outlet of Lake Ontario, 160 m. E. of Toronto. It is strongly fortified, and contains the Royal Military College of Canada (1876). It is joined to Ottawa by the Rideau Canal, and has foundries, shipbuilding yards, engineering workshops, flour mills, breweries, and tanneries. It is the seat of an Anglican bishop, and of a Roman Catholic archbishop. From 1841 to 1844 it was the capital of Canada. Pop. 18,000. (3.) City, New York, U.S.A., co. seat of Ulster co., on w. bk. of Hudson R., 75 m. N. of New York city. It trades in coal, stone, brick, lime, lumber, grain, cigars, soap, and cement. Pop. (1910) 25,908. (4.) Borough, Luzerne co., Pennsylvania, U.S.A., on the Susquehanna R., opposite Wilkesbarre; has coal-mining interests, railway repair shops, and hosiery manufacturers. Pop. (1910) 6,449.

Kingston, WILLIAM HENRY GILES (1814-80), English novelist, born in London, but lived some years in Oporto. His newspaper articles on Portugal helped the conclusion of the Anglo-Portuguese commercial treaty. He wrote more than 150 tales of adventure. Among the best known are *Peter the Whaler* (1851) and *The Three Midshipmen* (1862).

Kingston-upon-Hull. See Hull.

Kingston-upon-Thames, municipal bor., Surrey, England, 12 m. s.w. of London. It includes Norbiton and part of Kingston Hill, and is connected by a handsome bridge with Hampton Wick. The parish church of All Saints dates from the 14th century. The old royal chapel, in which several of the Saxon kings were crowned, fell in 1730, but the coronation stone is preserved opposite the

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Court House. The last encounter in the civil war took place here in 1648, when Lord Francis Villiers was slain. Pop. (1911) 37,977.

Kingstown (formerly Dunleary). (1.) Town and mail-packet station, Co. Dublin, Ireland, 6 m. s.e. of the metropolis. The harbour, one of the finest in the United Kingdom, commenced in 1817 and completed in 1859, is protected by piers, enclosing an area of 250 ac. Kingstown is a yachting rendezvous and favourite winter resort. Pop. (1911) 17,227. (2.) Seaport tn., on s.w. coast of St. Vincent, W. Indies, is the capital of the island, and exports sugar, rum, cocoa, arrow-root and spices. Pop. about 5,000.

Kingsway, the name of the new thoroughfare which forms the principal feature in the great street improvement designed by the London County Council for giving direct and easy communication between the Strand and Holborn.

Kingswinford, par. and vil., Staffordshire, England, 3 m. w. of Dudley; has coal and iron mines. Pop. (1911) rural dist. 20,808.

Kingswood, par. and vil., Gloucestershire, England, 3 m. e. of Bristol, makes boots and shoes. Pop. (1911) urb. dist. 12,705.

King-tê-chen, tn., prov. Kiang-si, China, 86 m. s.e. of Kiu-kiang, the great centre of porcelain manufacture. Kaolin, or China clay, derives its name from the Kau-ling Hills, to the w.

Kington, par. and mrkt. tn., Herefordshire, England, 12 m. w. by s. of Leominster; nails are manufactured. Pop. (1911) 1,819.

Kingussie, bur., Inverness-shire, Scotland, on the Spey, 55 m. N.N.W. of Perth. It is a favourite summer resort. Pop. (1911) 1,171.

King William's Town (locally called 'King'), tn., Cape of Good Hope, S. Africa, on the l. bk. of Buffalo R., 30 m. w.

by N. of East London. Capital of the old province of British Kaffraria. Pop. 9,500.

Kinkajou (*Urocoleotes caudivolvulus*), a small American carnivore, with a long prehensile tail. The claws are long, powerful, and much curved. The animal is about the size of a cat, but has a narrow elongated body. It lives in wooded regions from Mexico to Brazil, and feeds on small mammals, birds, eggs, honey, and fruit. Its habits are nocturnal.

Kinkel, JOHANN GOTTFRIED (1815-82), German poet, born at Oberkassel, near Bonn, and became (1846) professor of poetry and art at Bonn University. A friend of Geibel and Freiligrath, he published (1846) a remarkably popular epic, *Otto der Schütz*; and in the same vein appeared the stories in verse, entitled *Der Grobschmied von Antwerpen* (1872), *Margret*, and *Tanagra* (1883). For the part he took in the revolution of Baden (1849), he was arrested by the Prussians and imprisoned at Spandau; but escaped to England (1850), and later became a professor at Zürich (1866). Of several works his best were *Geschichte der bildenden Künste bei den christlichen Völkern* (1845), *Mosaik zur Kunstgeschichte* (1876), and *Peter Paul Rubens* (1874). See *Life in German* by Henne am Rhyn (1883).

Kin-kiang. See CHIN-CHIANG-FU.

Kinlochleven, new tn., at the head of Loch Leven, Argyllshire, Scotland, which dates from 1907. It has arisen through the development of the water power of the district by the British Aluminium Company.

Kinloss, vil., Ontario, Canada, in Bruce co., 115 m. W.N.W. of Toronto. Pop. 2,900.

Kinnaird, ARTHUR FITZ-GERALD, BARON (1847), director

of banking firm of Barclay and Co., Ltd., was educated at Eton and Trinity College, Cambridge. He has identified himself prominently with the evangelical party of the Church of England, and is an active worker in the Young Men's Christian Association.

Kinning Park, dist., Lanarkshire, Scotland, on the Clyde, forming, since 1905, the 26th ward of the city of Glasgow. There are important engineering works, biscuit, soap, and paint factories.

Kino, the red juice obtained by incision from the stem of *Pterocarpus marsupium* of the order Leguminosæ. After being dried in the sun it becomes a dark mass, that readily breaks up into small angular glistening grains, which are odourless, and when chewed colour the saliva red, and are of a strong astringent taste. The chief constituents are kinotannic acid and kino-red, which are partially soluble in water and almost completely in alcohol. Kino is largely used as an astringent, and also in the manufacture of red wines. Tincture of kino frequently gelatinizes; this is believed to be due to the presence of a peculiar ferment.

Kinross, tn., cap. of Kinross-shire, Scotland, on Loch Leven, 14 m. s. by E. of Perth; has manufactures of cotton goods, damasks, etc. Pop. (1911) 2,618.

Kinross of Gasclune, JOHN BLAIR BALFOUR, FIRST BARON (1837-1905), lord president of the Court of Session and lord justice-general of Scotland, was born at Clackmannan. He was called to the Scottish bar (1861), and commenced a career of great industry, which culminated in his elevation to the highest post in the Scottish judiciary (1899). He represented the united counties of Clackmannan and Kinross (1880-99); was solicitor-general for Scotland (1880); lord advocate (1881-5), and also

in the succeeding Liberal ministries of 1886 and 1892-5.

Kinross-shire, inland co. of Scotland, between Perthshire and Fife-shire, with an area of 87 sq. m. It is an open plain, surrounded by hills. Sixty-eight per cent. is cultivated, and much of it is adapted for cattle-rearing. Mellooch (1,573 ft.) and Whitecraigs (1,492 ft.) are the highest hills, and Loch Leven the chief lake. The minerals are coal and basalt, fireclay and limestone. Chief tn., Kinross. The county, with Clackmannan-shire, returns one parliamentary representative. Pop. (1911) 7,028.

Kinsale, tn. and seapt., Co. Cork, Ireland, 14 m. s. by w. of Cork, rises in steep terraces above the Bandon. The harbour is deep and sheltered. A party of Spaniards landed here in 1601 to aid the Irish. A fishery pier has been constructed. Pop. 4,200.

Kinsale Harbour, estuary of the riv. Bandon, Co. Cork, Ireland, extending 2 m. from Kinsale town.

Kin-sha-chiang. See CHIN-SHA.

Kinston, co. seat of Lenoir co., North Carolina, U.S.A., 70 m. E.S.E. of Raleigh; manufactures cottons, lumber, hosiery, silks, furniture and wagons. Pop. (1910) 6,995.

Kintyre, or CANTIRE, peninsular dist., Argyllshire, Scotland, is 42 m. long and from 4 to 11 m. broad. It is connected with the mainland by the isthmus of Tarbet. The chief industries are fishing, farming, distilling, and stone-quarrying.—**MULL OF KINTYRE**, promontory, at s. end of Kintyre. It is only 13 m. from the Irish coast.

Kiöge, tn., Denmark, on E. coast of the I. of Seeland, on Kiöge Bay, 20 m. s.e. of Copenhagen. In the bay, naval battles between the Danes and the Swedes were fought in 1677 and 1710.

Kioto, KYOTO, or SAIKYO, former cap. of Japan, prov. of Yamashiro, Hondo Is., 30 m. N.E. of Osaka, on Kamogawa R., which divides the city into two unequal parts, and is for the greater part of the year a mere rivulet. The city was founded in 793 by Kumanma, and called Hei-an-jo, 'the city of peace.' It remained the capital from that date until 1868. Kioto is noted for its magnificent temples, monuments, and Buddhist monasteries. The Mikado's or Imperial Palace covers an area of 26 ac. The most important industries are connected with the making of porcelain, faience, embroidery, fans, toys, brocades, and bronzes. The weaving and dyeing of silks is also largely carried on. The Imperial University, founded in 1876, is supported by government. The students number about 1,400. The Lake Biwa Canal, 7 m. long, constructed in 1890, connects Lake Biwa with the Kamogawa R. Pop. 450,000.

Kiowas, N. American aborigines, typical Prairie Indians, whose original home appears to have been about the headwaters of the Platte R. Driven thence by the Cheyennes and Arapahoes, they occupied extensive tracts on the upper Arkansas, and here formed a permanent alliance with the neighbouring Comanches. The Kiowas spoke an independent stock language noted for its harsh, guttural sounds, quite different from the Comanche. By the Medicine Creek treaty of 1867 both nations surrendered their hunting grounds, and were removed to the Kiowa, Comanche, and Wichita Reservation, Indian Territory, where the Kiowas now number about 1,000.

Kipchacks, Mongol race which about the year 1240 were settled in Russia between the rivers Don and Ural. Their leader was Batu, a son of Jenghiz Khan, who fixed

his golden tent near the Volga, from which the Kipchacks derived their name of the 'Golden Horde.' Under Batu's son, the nation took Cracow, and adopting Islam, became allies of Constantinople and Egypt. Their power dwindled in the 14th century, although the 'White Horde' or Eastern Kipchacks continued to flourish, and captured Moscow in 1382. They were entirely routed by Timur (Tamerlane) in 1390, and in the 16th century their power came to an end.

Kipling, JOHN LOCKWOOD (1837-1911), English sculptor, author and illustrator, was born at Pickering, Yorkshire, and entered the Indian Civil Service (1867). He was principal of the Mayo School of Art, and architectural sculptor in the Bombay School of Art (1865-75). In the latter year he was appointed curator of the Central Museum in Lahore (a post he held till 1893), and headmaster of the Lahore School of Industrial Art. He wrote a collection of Hindu and Mohammedan folk-tales entitled *Beast and Man in India* (1891), and illustrated his son Rudyard Kipling's *First and Second Jungle Books* (1894-5), and *Kim* (1901).

Kipling, RUDYARD (1865), English novelist and poet, was born in Bombay, Dec. 30, 1865. He was educated in England at the United Service College, Westward Ho, experiences of his school days there being subsequently utilized by him in his tale of schoolboy life, *Stalky and Co.* (1899), in which tale he figures as 'Beetle.' In 1882 he went to Lahore as sub-editor of the *Civil and Military Gazette*. He was in India till 1889, and during these years wrote, for the most part as contributions to the *Allahabad Pioneer*, the stories afterwards published in volume

form as *Plain Tales from the Hills*, *Soldiers Three*, *The Story of the Gadsbys*, *In Black and White*, *Under the Deodars*, *Wee Willie Winkie*, and *The Phantom Rickshaw*, and a volume of verses entitled *Departmental Ditties*. Before returning to England at the close of 1889 he made a tour in China, Japan, and America, and it was not long after his return that he published his first long novel, *The Light that Failed* (1891). The next six years were spent partly in England and partly in travel in America, S. Africa, Australia, and New Zealand. In the course of them he was married (1892) to Caroline Starr Balestier, with whose brother, Wolcot Balestier, he collaborated in a novel called *The Naulahka* in 1893. His other publications during this period were *Life's Handicap* (1891), *Barrack-room Ballads* (1892), *Many Inventions* (1893), *The Jungle Book* (1894), *The Second Jungle Book* (1895). Shortly after his return to England in 1896, he published a volume of poems, *The Seven Seas*; and his subsequent publications have been *Captains Courageous* (1897), *The Day's Work* (1898), *A Fleet in Being* (1898), *Stalky and Co.* (1899), *Kim* (1901), *Just-So Stories* (1902), *The Five Nations* (1903), *Traffics and Discoveries* (1904), *They* (1905), *The Army of a Dream* (1905), *Puck of Pook's Hill* (1906), *Actions and Reactions* (1909), and *Rewards and Fairies* (1910). In 1907 he was awarded the Nobel Prize for Literature. Kipling's literary output and its quality are remarkable; and more remarkable is the versatility of a writer who can range from the easy cynicism of *Plain Tales from the Hills* and *Departmental Ditties* to the realism of *Soldiers Three* and *Barrack-room Ballads*, the human charm of *Wee Willie Winkie*, the fantasy of

The Phantom Rickshaw, the keen observation of *Many Inventions*, *Captains Courageous*, and *Kim*, the delicate imagination of the two *Jungle Books*, and the dignified poetry of such works as the 'Recessional,' 'M'Andrew's Hymn,' and the 'Envoi' in *The Seven Seas*. See E. Gosse's *Questions at Issue* (1893), and article in *Poets of the Younger Generation*, ed. by W. Archer (1902).

Kiprensky, OREST (1783-1836), Russian portrait painter, born near Oranienbaum. He shows unusual breadth of technique, bold drawing, and careful characterization.

Kipu. See *QUIPU*.

Kiratpur, tn., Bijnaur dist., United Provinces, India, 42 m. N.E. of Meerut. Pop. 15,000.

Kirby, WILLIAM (1759-1850), English naturalist and entomologist, born at Witnesham, Suffolk. He was rector of Barham, Suffolk, and a prominent fellow of the Linnean Society. His *Monographia Apum Anglicæ* was published in 1802. The four volumes of *An Introduction to Entomology* were written conjointly with William Spence, and appeared in 1817-26. In 1835 the Bridgewater treatise *On the History, Habits, and Instincts of Animals* appeared. See J. Freeman's *Life of Kirby* (1852).

Kirchberg. (1.) Town, Germany, in Saxony, 6 m. s. by E. of Zwickau. Pop. (1910) 7,227. (2.) Comm., Switzerland, canton of St. Gall, 25 m. E. of Zürich. Pop. (1910) 5,620.

Kirchheim. (1.) Town, Württemberg, Germany, 15 m. S.E. of Stuttgart; has textile and other industries. Pop. (1910) 9,669. (2.) Town, Baden, Germany, near Heidelberg. Pop. (1910) 5,609.

Kirchhörde, comm., Prussia, in Westphalia, 5 m. s. of Dortmund; has tin works and coal mines. Pop. (1910) 13,417.

Kirchhoff, GUSTAV ROBERT (1824-87), German physicist, was

born at Königsberg, became professor of physics at the universities successively of Breslau (1850-4), Heidelberg (1854-74), and Berlin (1874-87). From 1845 onward he published a number of valuable papers on electrical and dynamical subjects. Then, in 1859-60, his researches on radiation led him to the definitive establishment of the science of spectrum analysis. His *Untersuchungen über das Sonnenspektrum* (1862) was translated into English. He published further, *Vorlesungen über mathematische Physik* (1876), and *Gesammelte Abhandlungen* (1882-91).

Kirchhoff's Laws. See ELECTRIC CIRCUIT.

Kirghiz, properly **KHAZAK**, a people widely spread over W. Central Asia, of Turkish blood, with a strong Mongol element, divided into two main groups—(1) Kirghiz Kazaks, (2) Kara-Kirghiz. The former inhabit the steppes of the Russian provinces of Ural, Turgai, Syr Daria, Akmolinsk, Semipalatinsk, and Semirechensk. They number about 2,747,000, and are a nomadic and patriarchal people. They are mentioned in Chinese annals from 9th century A.D. The Kara-Kirghiz, or Black Kirghiz, are found in the basin of Issik-kul, in the Syr Daria province, in Fergana, on the Pamir plateau, in Kulja, and in E. Turkestan. They are estimated to number about 340,000 in all. See Grodekov's *Kirgisen und Karakirgisen* (1886), and Zaleski's *La Vie des Steppes Kirghizes* (1885).

Kiria. See KERIYA.

Kirin, or **GIRIN**. (1.) Central prov. of Manchuria, with Korea and the prov. of Shing-king on the s. Well-watered and fertile, it produces tobacco, pulse, millet, maize, wheat, barley, potatoes, and the poppy. Kirin is the capital. Area, 105,000 sq.

m. Pop. est. at 6,000,000. (2.) Capital of above prov., at the head of navigation of the Sungari, 225 m. N.E. of Mukden. Pop. 100,000.

Kirjath-jearim (Josh. 9:17, etc.), a town on the northern border of Judah, Palestine, where the ark remained for some years (2 Sam. 6:2). It was near Beth-shemesh, and east of the 'camp' or 'plain' of Dan.

Kirjath-sepher, an older name for the Canaanitish town of Debir (Judg. 1:11).

Kirk, SIR JOHN (1832), British administrator, was born at Edinburgh; served with distinction in Turkey during the Russian war; was medical officer and naturalist to Livingstone's African expedition; then political agent at Zanzibar (1866-7); British plenipotentiary to the African Conference at Brussels (1889-90); special commissioner to the Niger Coast (1895).

Kirk-Agatch, tn., Asia Minor, 52 m. N.E. of Smyrna; has textile industry. Pop. 20,000.

Kirkburton, par. and tn., W. Riding, Yorkshire, England, 5 m. s.e. of Huddersfield; manufactures woollen and fancy goods, and has coal and iron mines. Pop. (1911) 3,410.

Kirkby-in-Ashfield, par. and vil., England, in co. of and 12 m. N.W. of Nottingham; has coal mines. Pop. (1911) 15,379.

Kirkby Lonsdale, par. and mkt. tn., Westmorland, England, on riv. Lune, 11 m. s.e. of Kendal. Pop. (1911) 1,524.

Kirkby Moorside, par. and mkt. tn., N. Riding, Yorkshire, England, 17 m. E. by N. of Thirsk. The town has manufactures of agricultural implements, and iron and brass founding. Pop. (1911) rural dist. 4,870.

Kirkby Stephen, par. and mkt. tn., Westmorland, England, on Eden R., 9 m. s.e. of Appleby. Copper, lead, and iron-

stone are mined. Pop. (1911) 4,504.

Kirkcaldy, seapt., roy. and parl. bur., on s.e. coast of Fife-shire, Scotland, 10 m. N. of Edinburgh. The High Street is about four miles long, hence the name of 'the lang toon o' Kirkcaldy.' Kirkcaldy is the home of the floorcloth and linoleum manufacture. Linen manufacture, bleaching, engineering, iron founding, pottery making, and brewing are other industries. Kirkcaldy unites with Burntisland, Kinghorn, and Dysart in returning one member to Parliament. Adam Smith, author of *The Wealth of Nations*, was a native, and here Thomas Carlyle and Edward Irving were school-masters for some years. Pop. (1911) 39,600.

Kirkcaldy, or KIRKALDY, SIR WILLIAM, OF GRANGE (d. 1573). Scottish soldier, who in 1546 took charge of the arrangements for the assassination of Cardinal Beaton. On the capture of St. Andrews Castle by the French, he was carried prisoner to France; but making his escape he took refuge in England. In 1557 he returned to Scotland, and in 1559 was specially active in the defence of Fife against the French. In 1562 he had an important share in the defeat of Huntly at Corrichie. With Moray he took up arms against the Darnley marriage in 1566, and after the failure to rouse the country against it sought refuge in England. Returning with Moray after Rizzio's assassination, he supported the Protestant lords against the queen on her marriage to Bothwell. It was to him she surrendered at Carberry, and it was mainly owing to his masterly generalship that she was defeated at Langside. After the conferences in England, his sympathies gradually veered towards the queen, and he finally decided

to hold the castle of Edinburgh for the queen's party; but was forced to surrender on June 3, 1573, and, owing to the 'denunciation of the preachers,' he was, on August 3, executed at the Cross of Edinburgh. See Grant's *Memoirs and Adventures of Sir William Kirkcaldy of Grange* (1849), Barbe's *Kirkcaldy of Grange* (Famous Scots Series), and P. Hume Brown's *History of Scotland*, vol. ii. (1902).

Kirkcudbright, co. tn., parl. and roy. bur. of Kirkcudbrightshire, Scotland, on l. bk. of the Dee, 6 m. from the Solway Firth. Pop. (1911) 2,191.

Kirkcudbrightshire, or the STEWARTY OF KIRKCUDBRIGHT, maritime co., Scotland, skirting the N. shore of the Solway Firth for some 50 m. The coast is irregular and rocky, and contains numerous caves, in former times the storehouses of smugglers (see *Guy Mannerin*). The shire is mountainous, especially in the N.W., and from that quarter undulates towards the Solway. Mount Merrick (2,764 ft.) rises in the N.W., Ciffel in the S.E., Cairnsmore of Carsphairn in the N., Cairnsmore of Fleet to the N.E. of Wigton Bay. Granite is quarried. Only 33 per cent. of the area is undercultivation. The county returns one member to Parliament. The chief town is Kirkcudbright. Area, 899 sq. m. Pop. (1911) 38,363. See Sir H. Maxwell's *History of Dumfries and Galloway* (1896).

Kirkdale Cave, limestone cavern, N. Riding, Yorkshire, England, 1½ m. w.s.w. of Kirkby-Moorside; owes its fame to the discovery, in 1821, of fossil remains of mammals now extinct in Great Britain.

Kirke, PERCY (?1646-91). English soldier, colonel of 'Kirke's Lambs,' served under Monmouth, and was appointed to command at Tangier (1680). The regi-

mental symbol, 'the Paschal Lamb,' provided the above nickname for his men, who, after Sedgemoor and Monmouth's defeat (1685), became a synonym for ferocity because of the treatment of the rebels. Kirke helped William III. against James, and raised the siege of Derry.

Kirkee, tn., India, 5 m. N.W. of Poona; has a large ammunition factory. Pop. 11,000.

Kirkham, par. and mrkt. tn., Lancashire, England, 7 m. w. by N. of Preston; manufactures cottons and linens. Pop. (1911) 3,793.

Kirkintilloch, par. and bur., Dumbartonshire, Scotland, 8 m. N.N.E. of Glasgow; has iron founders, coal mines, and chemical works. Pop. (1911) bur. 11,932.

Kirk-Kiliseh ('the town of forty churches'), tn., Turkey in Europe, 35 m. E. by N. of Adrianople; the chief station on the traffic route between the capital and the Balkans. Pop. 16,000.

Kirkless, vil., W. Riding, Yorkshire, England, 4 m. N.E. of Huddersfield; has remains of a Cistercian nunnery (1155) in which Robin Hood is said to have died (1247).

Kirkley, coast par. and vil., Suffolk, England, adjoining the town of Lowestoft. Pop. 6,500.

Kirkliston, par. and vil., Linlithgowshire and Midlothian, Scotland, 8 m. w. of Edinburgh; has coal mining and distilling. Pop. (1911) 5,296.

Kirkmaiden, par. in Rhinns of Galloway, Wigtownshire, Scotland, forming the southern extremity of Scotland. The greatest length in the kingdom is generally given as 'from Maidenkirk to John o' Groats.' Pop. (1911) 1,789.

Kirkoswald, par. and vil., Ayrshire, Scotland, 4 m. s.w. of Maybole. The village has associations with Burns, who spent a year here, and in the

churchyard are graves of ancestors of his, and of the originals of 'Tam o' Shanter' and 'Souter Johnie.' Pop. (1911) 1,685.

Kirkpatrick, vil., Canada, in Saskatchewan, 11 m. s.w. of Prince Albert. Pop. 1,500.

Kirk-session. See PRESBYTERIANISM.

Kirkstall, eccles. par. and vil., W. Riding, Yorkshire, England, 3 m. N.W. of Leeds; famous for ruins of a Cistercian abbey dating from 1152. Here are iron works. Pop. (1911) dist. 48,303.

Kirksville, tn., Adair co., Missouri, U.S.A., 34 m. N. of Macon; has flour and woollen mills, and agricultural implement works, and there are extensive coal mines in the vicinity. Pop. (1910) 6,347.

Kirkton, or KIRKTON IN HOLAND, tn., S. Lincolnshire, England, 4 m. s.s.w. of Boston. Pop. (1911) dist. 10,167.

Kirkwall, seapt., parl. and roy. bur., and chief tn. Orkney, Scotland, on N.E. of Pomona. The cathedral of St. Magnus dates from 1137. On the s. side are ruins of the bishop's palace and the earl's palace. Scott, in *The Pirate*, makes Cleveland meet Minna Troil in St. Magnus. There are distilleries. Pop. (1911) 3,810.

Kirkwood, DANIEL (1814-95), American astronomer, was born in Maryland; became professor of mathematics at Delaware College (1851), and in 1854 president of the same. In 1866 he was appointed professor of mathematics at the University of Indiana. In 1891 he accepted the appointment of lecturer on astronomy at the Stanford University, California. He published (1867-88) *Comets and Meteors*, and *The Asteroids*. He anticipated, in 1861, the relationship between comets and meteors established in 1866; criticised effectively Laplace's nebular hypothesis; and

explained the lacunae in the distribution of asteroidal orbits, and in Saturn's ring system, by the commensurability of the periods of the missing bodies with those respectively of Jupiter's and Saturn's satellites.

Kirman. See KERMAN.

Kirmanshah. See KERMAN-SHAH.

Kirn. (1.) Town, Rhine Prov., Prussia, 40 m. s. by w. of Coblenz; manufactures woollens and leather goods. Pop. (1910) 7,103. (2.) Watering-place, Argyllshire, Scotland, on w. side of the Firth of Clyde, adjoining Dunoon. Pop. 1,400.

Kirombo (*Leptosoma discolor*), a curious bird found only in Madagascar and the Comoro Islands. It is believed to be an aberrant roller, but resembles the frog-mouths in the presence of 'powder-down' patches on each side of the rump. 'Powder-down' feathers, it may be observed, are feathers which never fully develop, but continually disintegrate at their tips into a grayish powder. The kirombo — a native name — has its nostrils placed low down on the beak and covered by a horny plate, and its fourth toe is partially reversible, so that the foot is adapted for climbing.

Kirriemuir, par. and mrkt.-tn., Forfarshire, Scotland, 5 m. w.N.W. of Forfar; has linen manufactures. J. M. Barrie, a native, has immortalized it as 'Thrums.' Pop. (1911) par. 5,391; tn. 3,776. See *The Regality of Kirriemuir*, by Alan Reid (1909).

Kirsanov, tn., Russia, gov. of and 55 m. E. of Tambov. Pop. 11,000.

Kirschwasser, or CHERRY-WATER, is prepared from both the fruit pulp and the stones of ripe cherries.

Kir-shehr, tn., Asiatic Turkey, on trib. of Kizil Irmak, vilayet of and 85 m. s.E. of Angora;

is noted for its carpets. Pop. 9,000.

Kiryu, or KIRIU, tn., prov. Kotsuki, Japan, 60 m. N.N.W. of Tokyo; produces crape, gauze, satin, and a kind of silk resembling taffety. Pop. 24,000.

Kisfaludy, KAROLY (1788-1831), Hungarian dramatist, born at Tet, co. Raab. He is regarded as the founder of the national theatre. His best works are *The Tartars in Hungary* (1814) and *The Student Matthias*. German translation of both in *Gaab's Theater der Magyaren* (1820).

Kisfaludy, SANDOR (1772-1844), Hungarian poet and man of letters, the elder brother of Karoly, born at Sümeg, Zala co. His most celebrated works are *Himfy's Love* (1807) and *Legends of the Olden Time in Hungary* (1807), and the historical dramas *Janos Hunyadi* (1825) and *Ladislau the Cumanian* (1825).

Kishangarh, feudatory state in Rajputana, India, with an area of 874 sq. m., and a population of 90,000. The state produces cotton, for the spinning and weaving of which factories have been started. The chief town has the same name, and stands 18 m. N.E. of Ajmere. Pop. 12,000.

Kishinev, cap. of Bessarabia, S.W. Russia. 90 m. w.N.W. of Odessa. Brandy, leather, soap and candles, and woollen stuffs are made here. Tobacco, fruits, and wine are also produced. Jews form an exceptionally large element of the population. Pop. 126,000.

Kishm, tn. at E. end of island of same name, in Strait of Ormuz, Persia, 16 m. s. of Bender Abbas. It yields salt and sulphur. The island has an area of over 500 sq. m. Pop. of isl., 15,000; tn., 5,000.

Kishon, the river of Central Palestine which drains the plain of Esdraelon, and falls into the Bay of Acre. Here Sisera was

defeated (Judg. 4 : 7, 13), and Elijah destroyed the prophets of Baal (1 Kings 18 : 40).

Kishoregunge, tn., India, in Eastern Bengal and Assam, 50 m. N.N.E. of Dacca. Pop. 15,000.

Kiskörös, markt. tn., Hungary, co. Pest, 67 m. by rail S. by E. of Budapest; birthplace of the poet Petőfi (1823-49). Pop. 10,000.

Kiskunfélegyháza. See FÉLEGYHÁZA.

Kiskunhalas. See HALAS.

Kiskunmajsa, tn., Hungary, co. Pest, 30 m. S. of Kecskemet. Pop. 15,000.

Kismayu, coast tn., British East Africa Protectorate, 10 m. S.W. of the mouth of the Juba; cap. of Jubuland. Pop. 3,000.

Kismet (Pers. *kusmut*; Ar. *kisreh*), a word used by Mohammedans for 'fate' or 'destiny.' One of the leading precepts of Mohammed was that the decree of God, as preordaining the whole of a man's life, both here and hereafter, must be submitted to by the faithful with absolute resignation. See MAMMEDANISM.

Kissidugo, post of French Guinea, W. Africa, 140 m. S.E. of Timbo.

Kissing, a custom peculiar to Caucasians, and unknown to yellow and black races; originated in a maternal caress, and developed into the expression of affection, friendship, reverence, and love, according to Professor Lombroso (*Pall Mall Magazine*, August 1899). From the Roman custom of greeting friends by kissing arose the kiss of peace, as a symbol of Christian brotherhood. See Nyrop's *The Kiss* (trans. by W. F. Harvey, 1902).

Kissingen, wat.-pl. of Bavaria, prov. Lower Franconia, on the Franconian Saale, 14 m. by rail N.W. of Schweinfurt. Its mineral springs attract some 20,000 visitors annually. Pop. (1910) 5,830.

Kistna, or **KRISHNA**. (1.) River of S. India, rises in the W. Ghats at an altitude of 4,500 ft., flows S.E., and breaking through the E. Ghats empties itself by two main outlets into the Bay of Bengal, after a course of 800 m. It is unnavigable for the greater part of its course, but is of great use for irrigation, and is connected by a canal with the Godavari. Its drainage area is computed at 97,060 sq. m. (2.) District on E. coast of the Madras Presidency, India, containing the delta of the riv. Kistna, with a population of 2,155,000. Rice, millet, tobacco, cotton, and salt are produced. Masulipatam is the capital.

Kistvaen. See CIST.

Kisujszallas, tn., Hungary, co. Jasz-Nagykun-Szolnok, 46 m. S.W. of Debreczen. Pop. 13,000.

Kisumu, tn., British E. Africa Protectorate, cap. of Nyanza prov., on the N. of Kavirondo Bay, Victoria Nyanza.

Kit, of a soldier, applies in the stricter sense only to 'necessaries'—i.e. his underclothing, towels, and such things as brushes, knife, fork, razor, holdall, mess-tin, cleaning materials, etc. The recruit is provided with a complete set of these necessaries, free of charge, on joining, but must keep up the kit, complete and in good order, at his own expense afterwards. His pay includes a kit allowance of twopence per diem. The term is applied also to the gear issued for any specific purpose—e.g. 'camp kit,' 'sea kit.'

Kita, fort. tn. of French Sudan, in Upper Senegal and Niger, 170 m. S.E. of Kaye.

Kit-cat Club, a society founded by Jacob Tonson (1703), ostensibly to encourage literature and the fine arts, but really to promote the Hanoverian succession. The club derived its name from meeting at the house of Christopher Cat. Sir Godfrey Kneller

painted three-quarter length portraits of the forty-three members; hence the term 'kit-cat portraits' for figure paintings of this size.

Kitchener of Khartum, Horatio Herbert Kitchener, Viscount (1850), British agent and consul-general in Egypt (since 1911). He is the eldest son of the late Lieutenant-colonel H. H. Kitchener, of Aspall Hall, Suffolk, and entered the Royal Engineers in 1871, after passing through the Royal Military Academy, Woolwich. He was engaged on the Palestine survey from 1874-8, and from 1878-82 on the Cyprus survey. He then went to Egypt, where he remained till he had achieved the reconquest of the Sudan (1898), and was ordered to S. Africa as Lord Roberts's chief of staff (1899). During the intervening sixteen or seventeen years he was fully employed fighting and organizing. He commanded the Egyptian cavalry (1882-4); took part in the Nile expedition (1884-5) for the relief of General Gordon, when he gained brevet rank of lieutenant-colonel; was governor of Suakin (1886-8), adjutant-general of the Egyptian army (1888-92); wounded at Handub (1888); commanded a brigade at the battle of Toeki (1889), and was rewarded with a C.B.; and sirdar of the Egyptian army (1892-9) in succession to Lord Grenfell. He commanded the Dongola expeditionary force in 1896, and for his services was promoted major-general and created K.C.B. The crowning triumph of his arduous work in Egypt, and of the labours of the British officers who had been associated with him, was reached in 1898, when, at the Atbara (April 8) and Omdurman (September 2), he routed the dervishes and completely destroyed the power of Mahdism. Queen Victoria raised him to the

peerage in recognition of his great victories, and Parliament voted him a sum of £30,000, and, by formal resolution, thanked him 'for the distinguished skill and ability with which he planned and conducted the campaign on the Nile of 1896-8. During a flying visit to England on the conclusion of the Sudan campaign, Lord Kitchener raised £100,000 for the foundation of an educational college at Khartum in memory of General Gordon. During the Boer War he went to S. Africa with Lord Roberts as chief of staff, January 1900. He assumed supreme command on November 29, and waged war against the Boers by a system of 'blockhouses' and extensive 'drives,' till he secured an honourable peace on May 31, 1902. King Edward sent him a congratulatory telegram on the termination of hostilities, and raised him in the peerage to a viscountcy. Parliament voted him a sum of £50,000, and thanked him for his great services to the empire. Lord Kitchener returned to England on July 12, 1902, and proceeded to India to take up the chief command in the following November. In 1902 he was placed on the establishment of generals, and in 1909 was raised to the rank of field-marshal. In the same year the Duke of Connaught resigned his appointment of field-marshal commanding-in-chief and high commissioner in the Mediterranean, and Lord Kitchener was appointed in his place—Sir Frederick Forestier Walker acting in the interim. Lord Kitchener, however, never took up the appointment, and resigned it early in 1910. In 1911 he was made a Knight of St. Patrick, and succeeded Sir E. Gorst as British agent and consul-general in Egypt.

Kitchen Garden. See GARDENING.

Kitchen-middens, KITCHEN-MOUNDS, SHELL-MOUNDS, or SHELL-HEAPS, are terms used by archeologists to denote the domestic refuse-heaps of certain primitive races. They were first studied by the Danish professors Forchhammer, Steenstrup, and Worsaae (whence their earliest name *kjökken-mödding*), who published the result of their investigations in 1860, and placed in the museum at Copenhagen many thousand specimens of the objects found. The long mounds then examined had been previously supposed to be natural raised beaches. Rude implements of stone, bone, and wood, fragments of pottery, and broken animal bones were the objects found in the heaps; and in a number of cases the explorers came upon hearth-stones bearing the marks of fire. It accordingly became apparent that these mounds had been formed by a primitive race, and were simply the débris of their daily meals, flung from them as they ate. The largest heaps were about 1,000 ft. in length by 200 ft. in breadth, and 10 ft. deep. Many were of much smaller dimensions. The formation of such kitchen-middens is a process still going on among primitive peoples—notably among the Eskimos; and it is instructive to note that the process may be very rapid, as shown by Petroff's description of what he saw among the Aleuts, as quoted by Professors Keane and Windle:—'A family of three or four adults, and perhaps an equal number of children, will leave behind them a shell monument of their voracity a foot or eighteen inches in height after a single meal. The heaps of refuse created under such circumstances during a single season were truly astonishing in size. They will surely mislead the ingenious calculator of the antiquities of shell-

heaps a thousand years hence.' It will be seen, then, that kitchen-middens may belong to any period of man's history, and need not denote a very prolonged residence in their neighbourhood of the race who reared them. The rudeness of the great majority of the implements found in the heaps, and the kind of life otherwise implied, point to people in a low state of civilization. Thus, the Danish mounds might be mementoes of the savage Fenni described by Tacitus, as they wandered from camp to camp along the Baltic shores. In his consideration of the shell-heaps of Japan, Mr. J. Milne is inclined to ascribe them to the aboriginal Ainu, for the reason that the human tibiae frequently found in them are platycnemic, and many living Ainu show marked platycnemism. Kitchen-middens are very numerous in America, from Alaska to Tierra del Fuego, both on the Pacific and the Atlantic coast; and the Marquis de Nadillac (*Pre-historic America*) speaks of some in Florida that are more than 40 ft. high. (For views of the Florida mounds, see United States National Museum *Proceedings*, 1893, No. 966.) In Europe they are found along the coasts of the British Isles, Denmark, France, Portugal, and Sardinia. See Lubbock's *Prehistoric Times*, Brinton's *Artificial Shell Deposits of the United States*, and Proc. Soc. of Antiquaries, Keane's *Man Past and Present* (1900).

Kitchin, GEORGE WILLIAM (1827), was born at Naughton in Suffolk; dean of Durham (since 1894), warden (1894), and chancellor (1909) of the university; was censor of non-collegiate students at Oxford (1868-83); dean of Winchester (1883-94); has published *Catalogue of Manuscripts in Christ Church Library* (1867); the Arundel Society's *Life of Pope Pius II* (1881);

Winchester (1890), and a *Life of E. H. Browne, Bishop of Winchester* (1895); *Ruskin in Oxford* (1904); *History of France Previous to the Reformation* (4th ed. 1899-1903); *Record of the Northern Convocation* (1907), etc.

Kite, a term which, though strictly applicable only to the true or red kite (*Milvus ictinus*), known in Britain as the glead, is also used to designate other members of the genus *Milvus*, and is even generally applied to a group of birds of prey distinguished from the buzzards by the long forked tail, elongated wings, short metatarsus and toes, and claws only of moderate length. The red kite, once abundant in Britain, is now on the verge of extinction. The head is whitish, streaked with dark brown, the upper surface red-brown, and the lower rusty-red. The bird is a very miscellaneous feeder, but depends largely on offal. The nest is usually placed in a tree, and consists of a mass of sticks lined with rags and paper; the eggs are three to four in number. The total length of the body is rather over two feet, but though the flight is singularly easy and graceful, the bird cannot be reckoned among the powerful species. It is widely distributed throughout Europe, while the black kite (*M. migrans*) is a more southern form, migrating to S. Africa in winter. Other species occur in Africa and Asia. The beautiful swallow-tail kite (*Elanoides furcatus*) of America is chiefly black, with purple and green reflections, and is remarkable for its wonderful agility on the wing. It feeds chiefly on reptiles, while the kites of the genus *Milvus* usually act as scavengers in the regions in which they occur.

Kite. The first use of kites for scientific purposes, so far as is known, was in 1749, when Dr. Alexander Wilson and Thomas

Melville raised into the clouds thermometers attached to kites. Franklin's famous experiment of collecting the electricity of a thunder-cloud by means of a kite was performed three years later at Philadelphia. Modern scientific kite-flying may be said to date from 1883, when Douglas Archibald, in England, fastened anemometers to the kite wire, and so registered the wind movement at various elevations up to 1,200 feet. The experiments made by Franklin in 1752 were repeated in 1885 by Alexander M'Adie at Boston, U.S.A., with the addition of an electrometer. In 1889, and again in 1892, he measured simultaneously the electric potential at the base and summit of Blue Hill, and, with kites as collectors, at several hundred feet above the hill top. Eddy of Bayonne, New Jersey, in 1890 used an ordinary kite to raise thermometers, but soon discarded this for a tailless kite devised by himself. This resembled the Java kite (Fig. 1).

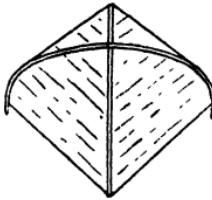


FIG. 1.—Java Kite.

The convex surface exposed to the wind enables a tail to be dispensed with (Fig. 2). In August 1894 Eddy at Blue Hill, Boston, sent up a thermograph 1,500 ft. above the summit, and so obtained the first automatic record of temperature by a kite. After that the records obtained from the meteorograph included data relating to barometric pressure, temperature, humidity, and wind velocity. Soon the Eddy or

Malay kite was discarded for the cellular or box-kite invented by Laurence Hargrave of Sydney.



FIG. 2.—*Eddy Tailless Kite.*

N.S.W. These kites (Fig. 3) generally have two rectangular cells covered with nainsook cloth, except at the top and bottom, and one is secured above the other by four or more sticks. Some of the kites stand 9 ft. high, have 70 sq. ft. of lifting surface, and weigh only eleven pounds. The kites are flown singly or in tandem (Fig. 4). Steel piano wire is used instead of cord, and as much as 32,000 ft. is coiled around a drum driven by steam power. By this means kites have raised meteorographs to altitudes of over three miles.

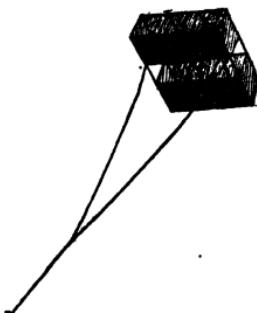


FIG. 3.—*Hargrave Kite.*

The general results of over two hundred records from kites flown at Blue Hill Observatory are

succinctly summarized by Mr. Rotch, the director, in *Quart. Jour. Roy. Met. Soc.*, xxiv. p. 250. To facilitate weather forecasts, the United States Weather Bureau has equipped sixteen observing stations with kite appliances, to obtain daily synoptic data at the height of a mile in the free air, while many of the meteorological bureaus in Europe have organized systematic kite flights.

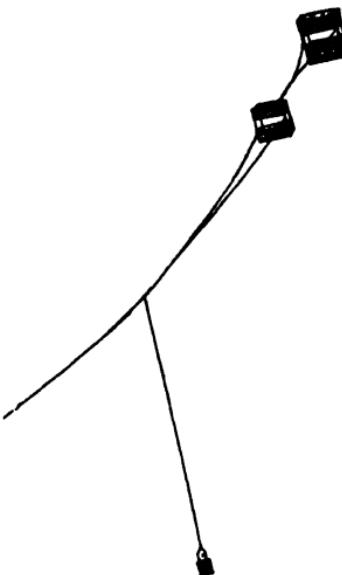


FIG. 4.—*Kites carrying Meteorograph.*

Recently the work has been taken up in Scotland. Military kites are chiefly of two kinds. A small one is used to carry a camera for photographing a fort or entrenched lines from above, the shutter being worked by electric wire or by clockwork. A larger kite, or (according to Major Baden-Powell) several kites coupled together, are used to lift a man up to, say, from 50 to

100 ft., for purposes of reconnoitring. The entire apparatus is cheaper, lighter in weight, and more expeditious than a balloon. These kites have been used in the British, United States, and other armies, and in the British navy. In Japan the sport of kite fighting is much practised, the object aimed at being to manipulate one kite so as to disable or cut the string of another. See Rotch's 'Sounding the Ocean of Air,' in *Annals of the Astronomical Observatory of Harvard College*, vol. xlii., part 1; *Monthly Weather Review, U.S.A.* (May 1896); Department of Agriculture Weather Bureau, *Bulletin F. Report on the Kite Observations of 1898*.

Kits Coity House. See DOLMEN.

Kittatinny or **BLUE MTS.**, in New York, New Jersey, and Pennsylvania, U.S.A., part of the Appalachian system, is a ridge from 1,200 to 1,800 ft. in height, and noted for beautiful scenery, including the famous Delaware Water Gap.

Kittery, vil., York co., Maine, U.S.A., opposite Portsmouth. There is a U.S. navy-yard there, commonly called Portsmouth Navy-yard. It became celebrated in connection with the treaty of 1905 concluding peace between Japan and Russia. Pop. 3,000.

Kittiwake Gull (*Rissa tridactyla*), a sea-gull characterized by the absence of the hind toe. It is resident in the British area, and breeds in large colonies in certain localities on narrow ledges of rock. It measures fifteen inches in length, and in summer is white and gray above, and white below, with black tips to some of its wing primaries. The legs are black, a distinction from the related *R. brevirostris* of the N. Pacific, which has orange legs and feet.

Kitto, JOHN (1804-54), English Biblical scholar, born at Ply-

mouth. He was apprenticed to a Plymouth dentist, who assisted him to publish his *Essays and Letters* (1825). He afterwards edited *The Cyclopaedia of Biblical Literature* (3rd ed. 1863-66), and published *The Pictorial Bible* (new ed. 1855-6), *History of Palestine* (new ed. 1859); *The Lost Senses* (1845); *Journal of Sacred Literature* (1848-53). See *Memoirs* by J. E. Ryland (1856).

Kitzingen, tn., Bavaria, prov. Lower Franconia, on the Main, 49 m. W.N.W. of Nuremberg; has breweries. Pop. (1910) 9,108.

Kluh-fow. See K'UH-FU.

Kiu-kiang, treaty port, prov. Kiang-si, China, on r. bk. of Yang-tse-kiang, about 10 m. above the outlet of Po-yang Lake, and 120 m. s.e. of Hankow. The delicate teas of Kiang-si were formerly shipped thence direct to Europe, but are now sent to Shanghai (445 m.) or Hankow for sale. Besides its teas (valued at about £900,000 per annum), porcelain from Kiu-té-chén, beans, grass-cloth, ramie fibre, indigo, paper, tobacco, cotton, and camphor are important exports. The total trade in 1910 was valued at £4,573,969. A health resort has sprung up since 1896 at Ku-ling in the mountains about 4,000 ft. above Kiu-kiang. The Ku-ling estate was extended in 1910 by the acquisition of the Talinssu valley. Pop. about 70,000.

Kiung-chow, chief city in the island of Hainan, off coast of prov. Kwang-tung, China; is 3 m. from its port Hoi-how (the only treaty port, opened in 1876, in the island). Chief exports, sugar, sesamum, grass-cloth, pigs, leather, nuts, and eggs. In 1910 the exports were valued at £321,306, and the imports at £551,398. Pop., including Hoi-how, 42,000.

Klushiu, or **KIMO**, the most southerly of the four large islands of Japan proper, separated from

Korea by the Strait of Korea, and from Nippon or Hondo by Shimonoseki Strait and part of the Inland Sea. The area (including smaller islands) is 16,840 sq. m., and the population 7,750,000. The coast of the large island is much indented, especially on the w.; the interior is mountainous and volcanic. Hot springs and *solfataras* are frequent. Rice, wheat, millet, beans, hemp, tea, and tobacco are produced. The production of coal is rapidly increasing, especially round Karatsu and in the island of Takashima, 8 m. s.w. of Nagasaki. Antimony is found in the s.w. Copper is mined, and tin is said to be abundant in the e. and s.w. The provinces of Hizen and Satsuma are celebrated for pottery, the latter for crackled faience. The chief harbour is Nagasaki.

Kivu, lake in Central Africa, crossed by 2° s., 60 m. n. of Lake Tanganyika. It lies at an altitude of 4,850 ft., and is very deep. In the centre is the large island of Kwijiwi.

Kiwi. See APTERYX.

Kizil Irmak, or HALYS, the largest river in Asia Minor, rises in the Karabel-dagh, from 70 to 80 m. E. of the town of Sivas. It flows w., n., and n.e., describing a deep curve, and falls into the Black Sea between Sinope and Samsun. In early days it marked the line of division between the Aryan races of W. Asia Minor and the Semitic or Hamitic races to the E., and it was the frontier of the empire of Croesus. Length, 550 m.

Kizil-kum, desert tract of Russian Central Asia, stretching between the Amu Daria and Syr Daria, and between the Aral Sea and the Kara-tau highlands, over 200 m. from N. to S., and nearly 380 m. from E. to W.

Kizil-Uzen, riv., N.W. Persia, rises in the mountains of Ardalan, and flows through Azerbaijan and

Ghilan into the Caspian Sea, 35 m. E. of Resht. Length, 450 m.

Kizlyar, tn., Caucasus, Terek prov., on the l. bk. of the Terek, 50 m. from its mouth in the Caspian Sea. A fort was erected here in 1735. The place is noted for its fruit and wine. Pop. 8,000.

Kjobenhavn, the Danish name of COPENHAGEN.

Kjöge. See KJØGE.

Kjölen Mountains. It was formerly supposed that Sweden and Norway were separated by a mountain range, the Kjölen or Keel. As a matter of fact no such range exists; the Scandinavian mountain system consists of a vast plateau, intersected by numerous deep valleys.

Kladderadatsch, the chief humorous newspaper of Germany; it is illustrated, and is published weekly in Berlin. It was founded in 1848 by Albert Hoffmann.

Kladno, tn., Bohemia, Austria, 16 m. w.n.w. of Prague; has iron and coal mines, iron furnaces, and iron and steel works. Pop. (1911) 19,339.

Klado, NICHOLAS LAWRENTIEVITCH (1861), an ex-captain in the Russian navy whose violent anti-English articles attracted some attention during the Russo-Japanese war. He was appointed chief of staff to Admiral Skrydlof at Vladivostok during the earlier stages of the war, and was with Vice-Admiral Rodjestvensky at the time of the 'North Sea incident' (October 1904). He has written on naval tactics, and was dismissed the navy on account of his writings in May 1905.

Klagenfurt, tn. and cap. of Carinthia, Austria, 114 m. by rail N. by E. of Trieste. It is an episcopal see. The chief manufactures are leather, white lead, machines, tobacco, and cloth. Pop. (1911) 28,958.

Klamath, riv., California, U.S.A., flows through Klamath lakes in S. Oregon, and after a cir-

cuous course through the Cascade and Coast ranges, which it pierces in cañons, reaches the Pacific in $41^{\circ} 32' N.$ Its length is 270 m., and its drainage basin extends to 14,660 sq. m.

Klang, chief seapt. of Selangor, Federated Malay States, 12 m. from the mouth of the Klang R.

Klapka, GEORGE (1820-92), Hungarian general, a native of Temesvar; joined the Hungarian revolutionists in 1848, and won the victories of Kapolna, Izsaszeg, Nagy-Sarlo, and Komorn over the Austrians. He wrote *The National War in Hungary and Transylvania* (1851); *The War in the East* (1855); and *Memoirs of the War of Independence in Hungary* (1850 and 1886).

Klaproth, HEINRICH JULIUS (1783-1835), German orientalist and traveller, was born at Berlin; became known by the publication of *Asiatischer Magazin* (1802, etc.), and was interpreter in the Russian embassy to China. As the result of a scientific mission to the Caucasus, he published *Archiv für die Asiatische Litteratur, Geschichte, und Sprachkunde* (1810). In 1816 he was appointed professor of Oriental languages in Paris, and published there *Asia Polyglotta* (1823), and *Aperçu Général des Trois Royaumes* (1833). See Landresse's *Notice Historique et Littéraire de Klaproth* (1835).

Klaproth, MARTIN HEINRICH (1743-1817), German chemist, was born at Wernigerode. He discovered uranium, titanium, and zirconium; advanced the theory of the conservation of mass by his careful quantitative work; and, besides memoirs on specific subjects, published *Beiträge zur chemischen Kenntniss der Mineralkörper* (6 vols. 1795-1815).

Klattau, tn., Bohemia, Austria, at E. foot of the Bohemian Forest, 25 m. s. by w. of Pilsen; produces machinery, cloth, and beer. Pop. (1911) 14,387.

Klausenburg. See KOLOZSVAR. **Klausthal**, or CLAUSTHAL, mining tn., Prussian prov. Hanover, in Harz Mts., 30 m. N.E. of Göttingen; is the centre of one of the principal mining districts (silver and lead) of Germany, and has a famous mining academy. Pop. (1910) 8,268.

Kléber, JEAN BAPTISTE (1753-1800), French general, was born at Strassburg. Joining the republican forces, he was commander in the Vendéan war, distinguished himself at Fleurus (1794), captured Maestricht, and defeated the Austrians at Altenkirchen (1796). He was general of division in Egypt (1798) under Bonaparte, and played a prominent part in the Syrian expedition, winning the battle of Mount Tabor (1799). He was assassinated at Cairo by a Turkish fanatic. See *Life*, in French, by Pajol (1877).

Kleist, EWALD CHRISTIAN VON (1715-59), German poet, born near Köslin; served under Frederick the Great, and was mortally wounded at Kunersdorf. His best-known poem is *Der Frühling* (1749). He was a close friend of Lessing. A complete edition of his works was issued in 1880-2. See *Life*, in German, by Karl Einbeck (1861).

Kleist, HEINRICH VON (1777-1811), German dramatist of the romantic school, was born at Frankfort-on-Oder. He was harassed till the day of his suicide, beside Wan Lake, near Potsdam, by his inability to achieve his literary ideals. He left at least five plays—*Der zerbrochene Krug* (1806), *Penthesilea* (1808), *Das Käthchen von Heilbronn* (1810), *Die Hermannsschlacht* (1810), and *Der Prinz von Homburg* (1810)—and one tale, *Michael Kohlhaas* (1808), which have won a permanent place in German literature. There are good editions of his *Gesammelte Schriften* by Tieck (new ed. by Schmidt,

1891), by Erich Schmidt (1904, etc.), and by Karl Siegen (1895; new ed. 1900). See *Lives* by A. Wilbrandt (1863) and Brahm (3rd ed. 1892).

Klephits, the bands of Greeks who, in the 16th century, carried on a system of guerrilla warfare against the Turkish conquerors of their country. Later they developed into ordinary brigands.

Kleptomania is a manifestation of insanity, in which the patient is possessed by an irresistible impulse to steal. The symptom is most frequently found in women, and sometimes occurs in relation to pregnancy. Kleptomaniacs often exhibit a history of hereditary insanity. In other cases, inquiry reveals that the patient has suffered from fits or from alcoholism.

Klerksdorp, tn., Potchef-stroom dist., Transvaal prov., S. Africa, 100 m. w.s.w. of Johannesburg. Here is a continuation of the W. Rand gold fields. Diamonds and coal have also been found. Pop. 5,000.

Kleve, or **CLEVES**, tn., Prussian prov. of Rhineland, 40 m. by rail N.N.W. of Krefeld. It is a Dutch-looking place, formerly capital of duchy of Kleve. The castle of the former dukes, with which the legend of the Knights of the Swan (Lohengrin) is associated, is now converted into law courts and jail. Agricultural implements, tobacco, and boots and shoes are made. Pop. (1910) 18,048.

K.L.H., Knight of Legion of Honour.

Klingenthal, tn., Saxony, Germany, 25 m. s.e. of Greiz. Pop. (1910) 6,160.

Klinger, FRIEDRICH MAXIMILIAN VON (1752-1831), German poet and playwright, was born at Frankfort-on-Main; was from 1780 to 1830 in Russian service, chiefly as head of the corps of pages. His drama *Sturm und Drang* (1776) gave the name to

the exuberantly-romantic school to which he belonged. He is best known by his novel *Der Weltmann und der Dichter* (1798), and the plays *Conradin* and *Media*. See Riegen's *Klinger in der Sturm-und-Drang Periode* (1880).

Klinger, MAX (1857), German painter and sculptor, born near Leipzig. His conceptions are original and bizarre, and his colouring unconventional. Among his etchings, *Eve of the Future* (1880), the series entitled *Life* (1882), and *Death* (1889) are remarkable. As a painter, his most noted work is *The Judgment of Paris* (1888), now in the Vienna Gallery. His *Pietà* is in the Dresden Gallery, and his statue of *Salome* (1894) in the Leipzig Museum. See Meissner's *Life*, in German (2nd ed. 1899), and his *Klingerwerk* (1896-1901).

Klinsti, tn., Chernigov. gov., S.W. Russia, 100 m. N.N.E. of Chernigov; carries on cloth-making, wool-weaving, tanning, and leather work. Pop. 12,000.

Klip River, dist. in N.W. Natal, bounded on the w. by the Drakenberg Range and s. by the Tugela R. Much coal is mined. Area, 1,440 sq. m. Pop. 34,000 (whites, 1,100). Cap. Ladysmith.

Klipsspringer, a small but very active antelope (*Oreotragus salator*), found in rocky regions from the Cape to Abyssinia. The height is under two feet.

Klondike, small riv. of the Yukon Terr., Canada; length, 120 m. The Klondike gold region includes the drainage basins of the Klondike and Indian Rvs. Gold was discovered here in 1896. Chief town, Dawson.

Klopstock, FRIEDRICH GOTTLIEB (1724-1803), German poet, was born at Quedlinburg. He was a pupil at Schulpflege (1739-45), and there conceived the idea of writing a great religious epic. The first three cantos of his *Messias* were published in 1748,

and were welcomed as a great victory in the literary conflict with Gottsched. In 1751 Klopstock received a pension from Frederick v. of Denmark, and remained at Copenhagen till 1770, when he went to Hamburg, where he lived until his death. The twenty cantos of the *Messias* were not completed till 1773. Although Klopstock devoted so much labour to his epic, his gifts were essentially lyric, and his epic contains many lyric passages of great beauty, and some which might even be called dramatic. By his *Messias* and by his early *Odes* (collected in 1771) Klopstock did much to emancipate German literature from the French forms, and to introduce Greek metres. He also wrote some patriotic dramas and other works, which secured him unequalled popularity. His works have been edited by Boxberger (6 vols. 1879), by R. Hamel (4 vols. in Kürschner's *Deutsche National-Litteratur*), and by Fr. Muncker (*Cotta'sche Bibliothek*). For his life, see Fr. Muncker's *Fr. G. Klopstock* (2nd ed. 1900), and E. Bailly's *Etude sur la Vie et les Œuvres de Fr. G. Klopstock* (1888).

Klostermansfeld, tn., Prussian Saxony, 21 m. W.N.W. of Halle. Pop. (1910) 5,487.

Klosterneuburg, tn., Austria, prov. Lower Austria, on r. bk. of Danube, 5 m. by rail N.W. of Vienna. Its chief feature is the institution of the Augustine Canons (1106). Excellent wine is made. Pop. (1911) 14,786.

Kloster Zeven, CONVENTION OF, a convention concluded on Sept. 8, 1757, by the Duke of Cumberland at the village of Zeven, 24 m. N.E. of Bremen, by which he agreed to disband his army, and thus leave Hanover to the French. British interests suffered in no way, and it was because Cumberland was personally so unpopular that he fell

into disgrace. He was only carrying out George II.'s orders. See *Political History of England*, vol. ix. ch. 27 (1909).

K.M., Knight of Malta.

Knapweed. See *CENTAUREA*.
Knaresborough, mrkt. tn., W. Riding, Yorkshire, 18 m. w. by n. of York. There are ruins of a castle erected soon after the conquest, and captured by Fairfax (1647), and dismantled (1648). St. Robert's chapel, an artificial cave, was the cell of a 13th-century hermit. Manufactures include sheetings, towelling, rugs, and leather. Limestone is also quarried. Pop. (1911) 5,315.

Knatchbull-Hugessen, EDWARD HUGESSEN, BARON BRABOURNE (1829-93), English statesman, born at Mersham Hatch, Kent; assumed the name of Hugessen (1849); sat as Liberal M.P. for Sandwich (1857-80); a lord of the Treasury (1859-66); was under-secretary for the home department (1860 and 1866); and under-secretary for the colonies (1871-4). He wrote books for children, papers against Home Rule, and edited the letters of his grand-aunt, Jane Austen.

Knee. The knee is a hinge-joint or ginglymus, and the bones entering into its formation are the lower end of the femur, the upper end of the tibia, and the posterior surface of the patella, or knee-cap. The synovial membrane of the knee is the largest in the body. The chief movement at the knee is that of flexion and extension, but slight rotation is also possible. The chief affections to which the knee-joint is liable are sprain or rupture of ligaments, synovitis, fracture of the patella, displacement of semi-lunar cartilages, and tubercular disease. Dislocation of the knee is rare. As in other joints, rest plays a leading part in the treatment of disease or injury of the knee. The joint should be fixed

by splints or by other mechanical contrivance; and should synovitis be present, counter-irritation and elastic pressure may also be employed. Elevation of the limb is generally desirable. In transverse fracture of the patella great difficulty is often experienced in securing sufficient relaxation of the extensor muscles to allow of bony union taking place between the fragments, and it is sometimes necessary to clamp or wire the upper fragment in apposition with the lower. Patients whose occupation compels them to kneel much are liable to an inflammation of the bursa over the patella. The condition is often called 'housemaid's knee.' When the semilunar cartilages become movable, they produce the same symptoms as other loose bodies in a joint. 'Locking' of the knee in one position is a frequent symptom.

Kneeling. This primitive Christian attitude in prayer (Acts 7:60; 20:36; 21:5) was intimately associated with the eucharistic controversy between the Puritan and Catholic parties in the Church of England. A declaration was inserted in the Prayer Book of 1552 explaining that the order requiring that the elements should be received by the communicants kneeling did not necessarily imply a real and essential presence of Christ in the sacrament. This declaration was somewhat altered in 1661-2, and the word 'corporal' was substituted for 'real and essential' presence. The declaration was in this manner made consistent with the doctrine of the real presence, while the teaching of the Anglican Church was clearly differentiated from that of the Church of Rome.

Kneller, Sir Godfrey (1646-1723), portrait painter, born at Lübeck in N. Germany; was a pupil of Rembrandt and Ferdi-

nand Bol at Amsterdam. His real career began after he proceeded to London (1675) and was introduced (1678) to the court of Charles II. In this and in the following reigns he was pre-eminent in his profession. For Mary II. he executed the *Beauties* at Hampton Court. His last public work was the portraits of the Kit-cat Club, and his most important an equestrian portrait of William III. at Hampton Court. He formed the first practical scheme for an institution to teach art (1711).

Kneller Hall, one of the finest specimens of Queen Anne architecture. It was the residence of Sir Godfrey Kneller, and is situated about midway between Twickenham and Hounslow, Middlesex. It now belongs to the nation, and the house is utilized as the headquarters of the Royal Military School of Music.

Kniaz Potemkine, first class battleship of the Russian navy Black Sea fleet, with a displacement of 12,500 tons and a speed of 17½ knots. The ship has the unique distinction of being the first modern battleship which has mutinied against its government. This occurred in June and July 1905. In October 1905 the ship's name was changed to St. Pantaleimon.

Knibb, William (1803-45), English Baptist missionary, born at Kettering; was teacher in a school in Jamaica (1824). Returning to England (1832), he greatly promoted the Emancipation Act of 1833. He died in Jamaica.

Knickerbocker Families, a name for the Dutch settlers of New York and their descendants. It originated in the *nom de plume* of Diedrich Knickerbocker, used by Washington Irving in his *History of New York* (1809).

Knight, Charles (1791-1873), English author and publisher,

was born at Windsor, where in 1812 he established the *Windsor and Eton Express*, editing it till 1821, and simultaneously printing the *Etonian*. From 1820 to 1822 he conducted, in conjunction with E. H. Locker, *The Plain Englishman*. Settling in London (1822), he founded *Knight's Quarterly Magazine*, thus beginning a striking record as editor and publisher of standard and valuable works at uncommonly low prices. For the Society for the Diffusion of Useful Knowledge he issued the *Penny Magazine* (1832-45), the *Penny Cyclopædia* (1833-44), and the *English Cyclopædia* (1853-61). His *Pictorial Shakespeare* (1838-41) introduced the dramatist to new circles of readers. He appropriately accompanied this work with his popular if somewhat uncritical *Shakespeare: a Biography* (1843). Knight's other publications—prepared in the same spirit, and well received—include *The Library of Entertaining Knowledge* (1829, etc.); *The Pictorial Bible* (1836); *The Pictorial Prayer-Book*; *The Pictorial History of England* (1837-44); *London Pictorially Illustrated* (1841-4); *Old England Illustrated* (1844); *Once Upon a Time* (1854); and *Popular History of England* (1856-62). He was appointed publisher of the *London Gazette* (1860). See Knight's *Passages of a Working Life* (1864-66), and *Life* by Alice Clowes (1892).

Knight, EDWARD FREDERICK (1852), war correspondent, journalist, and author, born in Cumberland, was educated at Westminster and Cambridge. He was called to the bar in 1879, and since that time has had an active life as *Times* war correspondent in the Hunza-Nagyr campaign (1891), Matabeleland (1893-5), Madagascar (1895), Sudan (1896, and 1897-8), Greece (1897), Spain (1899), and was the *Morning Post*

special war correspondent in the South African war (1899-1902), when he lost his right arm at Belmont. He was with Kuroki's army in 1904, and in Turkey in 1908. Mr. Knight is also an expert sailor, and has published *Albania* (1880), *The Cruise of the 'Falcon'* (4th ed. 1887), *The Falcon' on the Baltic* (1889), *The Cruise of the 'Alerte'* (1890), *Where Three Empires Meet* (3rd ed. 1893), *Rhodesia of To-day* (1895), *Madagascar in War Time* (1896), *Letters from the Sudan* (1897), *A Desperate Voyage* (1898), *With the Royal Tour* (1902), *South Africa after the War* (1903), and *The Awakening of Turkey* (1908).

Knight, RICHARD PAYNE (1750-1824), English archeologist and numismatist, and classical scholar, who bequeathed his collection of coins, medals, pictures, prints, and drawings, valued at £50,000, to the British Museum. He wrote *An Account of the Remains of the Worship of Priapus* (1786), *An Analytical Enquiry into the Principles of Taste* (4th ed. 1808), *Carmina Homericæ* (1808), a poem entitled *Landscape* (1794), and *The Progress of Civil Society* (1796). He sat in Parliament as M.P. for Leominster (1780), and for Ludlow (1784-1806).

Knight, WILLIAM ANGUS (1836), was professor of moral philosophy at St. Andrews University (1876-1902). His writings include volumes on Hume (1886) and Wordsworth (1889), whose *Works* he edited (12 vols. 1896-7). He edited also *Philosophical Classics for English Readers* (15 vols. 1880-90), *Transactions of the Wordsworth Society* (8 vols. 1880-6), and twenty-five volumes of the University Extension Manuals (1891, etc.); and has written *Principal Sharp and his Friends* (1888), *The Philosophy of the Beautiful* (1891-3), *Nugæ Viatoris* (1897-1903), *Andropolis* (1903), and other books,

Retrospects (1904; 2nd series, 1905).
A Psalter for Daily Use (1909).

Knighthood. In the *Germania* Tacitus asserts that among the German tribes the *principes*, or official magistrates, were attended by a body of *comites*, or companions, who fought for their masters in time of war. These *comites*, after the English conquest of Britain, were known as *gesiths*. After the first series of Danish invasions (855-897), the gesiths were mostly merged in the new class of *thegns*, some of whom no doubt received land in exchange for military service. This class, which had some of the characteristics of the later knight class, increased in importance, and by the time of the Norman conquest had become the great landowning body in England.

After 1066 the term knight was extended to the whole body of military tenants, and gradually it became recognized that every man who had twenty pounds' worth of land was liable to knighthood. While military service existed to some extent in Anglo-Saxon times, it became under the Normans the necessary feature of knighthood. Every knight, though he might hold his land of some *mesne lord*, owed military service to the king. (See CHIVALRY and FEUDALISM.) The Oath of Salisbury in 1086 emphasized this obligation. Closely connected with knighthood is chivalry, which may be said to represent the atmosphere which surrounded the medieval knight. The religious character of the investiture of a knight, the respect paid to women, the development of the idea of honour, all formed part of that chivalry which was closely bound up with the order of knighthood. The knight's fee was subject to certain feudal rights, incidents, and services, and both in England and on the Continent there were various

grades of knighthood. The feudal system of tenures was valuable for defensive purposes; but Henry II. found that the restriction of the service of holders of fiefs to forty days made offensive warfare impossible. He therefore levied scutage instead of demanding the personal attendance of knights for foreign service, and thus was able to hire mercenaries. In the Hundred Years' war Edward III. relied mainly on the system of enlistment by means of a contract between himself and certain great nobles. Though Edward III. and his court made great efforts to revive chivalry and knighthood, the discovery of gunpowder and the development of commerce gradually destroyed its military character. After the rebellion of Wat Tyler, Philip Walworth, the intrepid mayor of London, was knighted—an honour never before received by a civilian. In the Tudor period civilians frequently received the honour of knighthood. The decay of knighthood as a purely military institution was rapid from the end of the 14th century. Men who held a certain amount of land were still liable to be called upon to take up the dignity of a knight; and Charles I., when in need of money, fined many of his subjects for their non-compliance with the letter of the law. At the restoration knight-service was formally and finally abolished. There is no doubt that the system of knighthood, owing to its close connection with religion, proved a valuable civilizing force in the middle ages. See Stubbs's *Constitutional History of England* (1886); Grose's *Military Antiquities* (1786-8); Freeman's *Norman Conquest* (3rd ed. 1877); Selden's *Titles of Honour* (1614); Nicolas's *British Orders of Knighthood* (1841-2); Gautier's *La Chevalerie* (1891).

Knightia, a genus of trees and shrubs belonging to the order Proteaceæ. The New Zealand species, *K. excelsa*, is the only one cultivated in Britain. It has long, thick, evergreen, coarsely-toothed leaves, and bears long axillary racemes of pinkish flowers.

Knightsbridge, dist. of London, England, in the boroughs of St. George's, Hanover Square, and Westminster. The dists. of Mayfair and Knightsbridge had a pop. of 26,183 in 1911.

Knight-service, the tenure by which in feudal days a tenant-in-chief held his property of the king—i.e. for each knight's fee he had to provide one fully-armed knight. He was also liable to the feudal aids, which were abolished in 1660.

Knights Hospitallers. See HOSPITALLERS.

Knights of Labour. See TRADE UNIONS.

Knights of Rhodes and Malta. See HOSPITALLERS.

Knights of St. John of Jerusalem. See HOSPITALLERS.

Knights Templars. See TEMPLARS.

Knin, tn., Austria, in Dalmatia, 40 m. N. by W. of Spalato. Pop. (1911) 25,930.

Knittelfeld, tn., Austria, in Styria, 30 m. W.N.W. of Gratz. Pop. (1911) 9,947.

Knitting, the forming of a looped web or fabric, may be done (1) by hand; (2) on a frame.

(1) Hand knitting has for appliances two or more straight needles of wood or iron, the fabric being, by the aid of these, made up from one continuous thread. A series of loops is formed successively on each needle by passing the thread round a pin and drawing it through the previously made loop. Each stitch so worked is then slipped off and left hanging free. The first row being completed, a second row is

worked below it in a similar manner; and so on to any length. If two needles only are used, the fabric formed will have a selvedge or edge on each side; if three needles, a continuous circular web, as of a stocking, may be knitted.

(2.) Framework knitting was introduced about the year 1589 by William Lee of Nottinghamshire, the mechanical principles of whose invention remain almost unaltered to the present day. By providing, in the 'hand stocking-frame,' a needle for each loop, so that all the loops in one row were formed simultaneously, the speed of knitting was increased from 100 stitches per minute by hand to 600 stitches per minute on the frame. The first fabric thus produced was a flat piece, circular work not being accomplished until later. The frame was of a coarse gauge—having only sixteen needles in three inches—and necessitated the thread being laid over the needles by hand. Between each needle was a 'jack sinker,' which fell down to form the loop, and was then raised so as to leave the loop free on the needle. The loops were next secured by a series of springs, or 'beards,' closed by a horizontal bar called a 'presser,' and the last (finished) row of loops being brought over the needle beards, dropped upon, and completed the formation of, the next row. About 1620 many improvements were made by Ashton. The needles were placed much closer together, and a second set of sinkers, termed 'lead sinkers,' was added, and placed alternately with the jack sinkers. In later machines of the same class one jack sinker, making a loop over three needles, was worked alternately with two lead sinkers, a very fine fabric being produced. Frames are now at work with as many as forty-five needles to the inch.

In order to vary the stitch produced on the hand frame, a 'tuck' presser was added in the year 1745. This had its edge cut instead of plain, and so could press any one needle beard, or leave one open, and thus allow the old and new loops to remain together on the needles for one or more rows. In this way were introduced fancy designs.

Rib work was the first variation from a plain fabric, and was produced on a hand frame by the addition of a rib machine invented by Strutt about 1758. The method of producing those open-work designs, from which the modern lace hosiery has developed, was introduced about 1763. Certain loops are removed from one needle and added to an adjoining one, the empty needle forming a small hole in the fabric.

Warp Knitting.—The first great variation in framework knitting was made by the adoption of 'warp' threads, one to each needle, instead of the one thread to each row, as in the former (plain-knitting) methods. The warp threads are laid alternately on the needles to right and left, thus forming a series of loops without the intervention of sinkers, which are dispensed with altogether. This system was perfected by the invention of the Dawson wheel, which enabled the threads to be laid in any direction at any course.

Mechanical Frames.—The first stocking-frame was driven by steam power in 1828, and from that date the hand stocking-frame and hand warp-frame were gradually superseded by the rotary frames and looms, the machines of to-day. Hand-frames are now only in use for exceptional work, as in the glove and fancy shawl trades.

Circular Knitting.—About 1830 a French inventor introduced a

machine for circular knitting by means of a series of bearded needles radiating outwards from a revolving ring, the loops being formed by sinkers which also revolved. Ten years later a machine was introduced in Nottingham which performed similar work, but of smaller diameter, by means of vertical needles and bladed sinker wheels. A machine on this principle is still known as the English loop-wheel circular frame. A still greater improvement was the adoption, in 1848, of a self-acting or 'latch' needle, which formed a loop without the aid of the sinkers and pressers indispensable to the bearded needle. The latch needle has a hook which is closed automatically by a latch at one part of the stroke, so that the new loop may be passed through the old one, and is then opened for the former loop to be freed and another admitted. This machine produced circular fabrics much more cheaply than could any other type; but for some years the latch-needle system was not adapted for making flat fabrics. For these, the older bearded needle frames—improved by the patents of Paget in 1857 and Cotton in 1864—were still used. About 1870 an American automatic machine, called the Griswold knitter, was introduced into England. Either flat or circular fabrics can be made on this machine, which has been improved, by successive inventions, so as to produce also either plain or ribbed material. No circular 'shaped' fabrics have as yet, however, been made automatically.

Knives, TABLE. The best kinds of table knives are forged by hand out of a flat bar of crucible steel; but mechanical forging is now extensively employed in Sheffield. Hand-forging is scarcely ever seen in the cutlery works of Germany and the United States.

The hand forger first hammers the end of the bar into a roughly-shaped blade, and upon it welds a piece of iron from which he produces the 'bolster' (the raised portion between the blade and the handle) and the 'tang,' on which the handle will afterwards be fastened. The complete blade is then heated again, and hammered in such a way as to make an edge. The next operation, known as hardening and tempering, is the most difficult and important of all the processes, as the cutting and wearing qualities of the knife depend largely upon the manner in which it is performed. Machine-forging is done by a power hammer delivering a series of rapid blows, or by stamping out the blade from a strip of steel by a single blow in a machine. A cheaper grade of steel is employed for machine-forged knives, and the blade, bolster, and tang are made in a single piece. Hand-forged knives can be recognized by a sort of thumb-mark at the bottom of the blade caused by the welding of the blade to the bolster and tang.

From the forger the blade goes to the grinder. After a preliminary rough grinding on back and edge, and next on each side, it undergoes a series of polishing processes.

The finest hafting material is ivory, which comes to Sheffield in complete elephants' tusks, and is sawn up into the different sizes of handles. The material most used for this purpose, however, is an imitation of ivory known as celluloid or xylonite, composed of cotton waste and camphor. Other hafting materials are stag's, buffalo's, and cow's horn; in some foreign countries wood is preferred.

PEN AND POCKET.—The invention of spring knives, the blades of which could be folded into the handle, about the middle of the

18th century, was an important event in the cutlery industry. The penknife is so named because it was originally made to cut the nibs in quill pens. Many kinds of hafting material are used for these knives, the most popular ones being silver, German silver, ivory, pearl, tortoise-shell, celluloid, steel, horn, and wood.

Knobel, KARL AUGUST (1807-63), German Biblical scholar and Orientalist, was born at Tzschecheln, near Sorau, Silesia, and was professor successively at Breslau (1835) and Giessen (1838), where he died. His commentary on Genesis forms the basis of Dillmann's work (trans. by Stevenson), and he occupies an important place in the development of Pentateuchal criticism. Other works by Knobel are *Der Prophetismus der Hebräer* (1837), and commentaries on *Ecclesiastes* (1836), *Isaiah* (1843), *Exodus* and *Leviticus* (1857), *Numbers*, *Deuteronomy*, and *Joshua* (1861).

Knock, par., Co. Mayo, Ireland, 5 m. N.N.E. of Claremorris. In 1879 it was reported that the Blessed Virgin had visited the church, and as a result it became for some time a pilgrimage resort.

Knock-knee is a deformity in which the legs, instead of being parallel when extended with the feet pointing forwards, diverge so that when the knees touch each other the internal malleoli of the ankles are some distance apart. Curvature of the spine and other skeletal deformities of similar type are frequently associated with knock-knee. The condition arises as a result of rickets in children between the ages of two and seven; also in growing lads, less frequently girls, about the age of puberty. In slight cases, where the child is young and the bone still soft, the condition may be cured by keeping the patient's feet entirely off the ground and by applying splints, which straighten

the legs, dietetic and hygienic measures being also adopted to counteract rachitic tendencies. In patients who are older, or in whom the deformity is more marked, ostectomy of the femur is generally necessary.

Knockmealdown Mts., a range, Ireland, between the cos. of Waterford and Tipperary, length 12 m., average width, 4 m. Alt. 2,600 ft.

Knossus, Crete. See CNOUSUS.

Knot (*Tringa canutus*), a bird belonging to the same genus as the sandpipers, which winters in Britain in considerable numbers. It is found practically over the whole world, but breeds only in the far north—probably in N. Greenland and Arctic America. In the non-nuptial plumage the bird is ash-gray above and white flecked with gray below; but when breeding the under surface is largely chestnut, and the back red-brown with black-and-white markings.

Knot, the conventional nautical mile, is assumed to be 6,080 ft. A statute mile is 5,280 ft. For navigating purposes, a mile of latitude and a minute of longitude are considered to be of equal value. Consequently the nautical mile is the length of a minute of the meridian, and, strictly speaking, is different for every latitude. In the United States the sea mile is calculated at 6,082·66 ft. For charting and other purposes 10 cables make one knot, though a cable, as a measure of distance, is generally assumed to be 600 ft. A knot is so called from the fact of knots being made in the log-line, which is used to ascertain the rate at which a ship is progressing through the water. See LOG, NAVIGATION.

Knot (in cordage). Scientifically defined, a knot is an endless physical line which cannot be deformed into a circle. The scientific

knot has been extensively treated in works by Listing (*Göttinger Studien*, 1847) and by Tait (*Trans. Roy. Soc. Edin.*, 1876-7). For practical purposes a knot is either (a) a knob at the end of a piece of rope, made with or without inlaying the strands of it, or (b) a method of arranging a rope for making it fast to another, or to some object, such as a ring or a spar. Among the usual knots are the following:—

(1.) ‘Overhand knot.’ The commonest kind of knot, made by passing one end of a line over the line and round it, and then passing it through the loop. (2.) ‘Reef knot.’ Form an overhand knot as above, and repeat the process with the opposite end of the line (Fig. 1): if two overhand knots are made the same way, the result will be a ‘granny’ (Fig. 2). (3.) ‘Bowline knot.’ Lay the end of the rope *a* over *b* so as to form a bight *c*; pass the end *a* round behind and under *b*, and through the bight; continue with *a* to pass it under the standing part *b*, and through the bight *c* in the opposite direction. This knot forms the best loop that will not slip (No. 3). (4.) ‘Half-hitch.’ Pass the end *a* of the rope round the standing part *b*, and through the bight (No. 4). (5.) ‘Clove hitch.’ Pass the end *a* round a spar, and cross it over *b*. Pass it round the spar again, and put it through the second bight (No. 5, Fig. 1). This is a knot that is very useful and safe. For making a line fast to a bollard, the whole process can be quickly done by an expert by merely throwing two loops, placed rightly, over the top of the bollard, and pulling taut (Fig. 2). (6.) ‘Blaekwall hitch.’ Form a bight at the end of a rope, and put the hook of a tackle through the bight, so that the end of the rope may be jammed between the standing part and the back of the hook



N° 1



Fig. 1.



Fig. 2.

N° 2

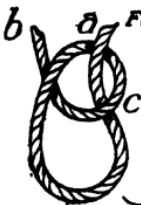


Fig. 1.



Fig. 2.

N° 3



N° 4



Fig. 1.

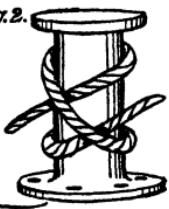
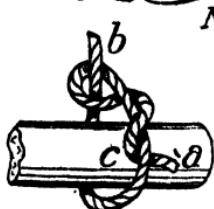


Fig. 2.

N° 5



N° 6



N° 7



N° 8



N° 9



N° 10



N° 11



N° 12

Common Knots. (For explanation, see text.)

(No. 6). (7.) 'Timber hitch.' Take the end *a* of a rope round a spar, then round the standing part *b*, then several times round its own part *c* (No. 7). (8.) 'Fisherman's bend.' Take two turns round a spar, then a half-hitch round the standing part, and between the spar and the turns, and lastly, make a half-hitch round the standing part (No. 8). (9.) 'Carrick bend.' Lay the end of one rope over its own standing part so as to form a bight. Put the end of the other rope through this bight under the standing part, over the end beyond the bight, under the standing part beyond the bight, and down through the bight over its own standing part (No. 9). (10.) 'Sheet bend.' Pass the end of one rope through the bight of another, round both parts of the other, and under its own standing part. (11.) 'Single wall knot.' Unlay the end of a rope, and with the strand *a* form a bight. Take the next strand *b* round the end of *a*. Take the last strand *c* round the end of *b*, and through the bight made by *a*. Haul the ends taut. This knot is for the purpose of forming a stopper, and to prevent the end of a rope from coming apart. (12.) 'Single wall crown.' To make a crown on a single wall knot, take one of the ends, *a*, and lay it over the knot; lay *b* over *a*, and *c* over *b*, and through the bight of *a*. Pull the ends taut. In addition to this knot there are a double wall and a double wall crown knot, made in a similar way by doubling the strands. For the double wall crown knot, form a single wall crown, then let the ends follow their own parts round until all the parts appear double. Put the ends down through the knot. Several other knots are used in seamanship.

Knottingley, par. and urban dist., W. Riding, Yorkshire, Eng-

land, 3 m. N.E. of Pontefract; has breweries, potteries, and roperies. Pop. (1911) 6,682.

Knout, a thong of leather, triangular in shape, and very long, with which people were flogged upon the back in Russia. It was sanctioned by the father of Peter the Great, and was abolished by Czar Nicholas I.

Knowle. (1.) Par. and vil., Warwickshire, England, 10 m. s.e. of Birmingham; has a church of great antiquity. Pop. (1911) dist. 4,195. (2.) A sub-district of Bristol, Gloucestershire. Pop. (1911) 20,150.

Knowles, Sir James (1831-1908), English editor, and founder of the *Nineteenth Century*; was an architect, and designed Tennyson's house (Aldworth, on Blackdown, in Surrey), Kensington House, the Thatched House Club (St. James Street), Albert Mansions (Victoria Street), and churches at Clapham. In 1869, with Tennyson's help, he founded the Metaphysical Society. The society came to an end after ten years. It was with the support of many of its members that Knowles successfully conducted the *Contemporary Review* (1870-77), and they followed him when, in 1877, he left it to found the *Nineteenth Century* (now the *Nineteenth Century and After*).

Knowles, James Sheridan (1784-1862), British dramatist, born at Cork, his father being first cousin of Richard Brinsley Sheridan. The son became acquainted with Hazlitt and Charles Lamb, and made an appearance on the stage. For many years, however, he taught at Belfast and at Glasgow. *Caius Gracchus*, his first great success (produced at Belfast, 1815), was followed by other plays, such as *Virginius* (1820), *The Hunchback* (1832), *The Love Chase* (1837). In later life he became a Baptist, and lectured on 'No Popery' at Exeter Hall,

London. See *Life of James Sheridan Knowles*, by his son (1872).

Knowltonia, a genus of perennial herbaceous South African plants belonging to the order Ranunculaceæ. They bear branching cymes or umbels of dullish flowers, and secrete peculiarly acrid juice. *K. vesicatoria* is occasionally seen as a greenhouse plant.

Know-nothings, a party first organized in the United States in 1853, being originally a secret association, whose members, refusing to give information about themselves, or to admit their connection with the party, were called 'Know-nothings.' Their object was to secure the government to those whom they considered genuine Americans. Catholics and recent emigrants they regarded with suspicion. For a moment powerful, especially in the Northern States, they were able to put up Millard Fillmore as presidential candidate in 1856; but the agitation on the slave question swept them out of existence. They are sometimes known as 'the American party.' See *Cambridge Modern History*, vii. ch. 13 (1903).

Knowsley, par., Lancashire, England, 5 m. w. of St. Helens. Near it is Knowsley Hall, the seat of the Stanleys since the reign of Richard II. It contains valuable art treasures by Rembrandt, Rubens, Teniers, and Correggio, and an extensive library.

Knox, JOHN (1513-72), Scottish reformer, was the son of William Knox, a feudal dependant of the earls of Bothwell. He was born either in Giffordgate, Haddington, or at Morham, in the adjoining district of Gifford. He took minor orders, and during 1540-3 was practising as a notary in the Haddington district. In 1546, while acting as tutor to the sons of Douglas of Long-

niddry and Cockburn of Ormiston, he came under the influence of the reformer Wishart, and when Wishart was arrested he took refuge in April 1547 with his pupils, in order to escape a similar fate, in the castle of St. Andrews, then held by the murderers of Cardinal Beaton. There, at the urgent request of certain leading reformers, he was induced, after great hesitation, to accept the position of preacher in the parish church of St. Andrews. His labours were, however, cut short by the surrender of the castle to the French in July, when he and other reformers, in violation of the terms, were sentenced to labour in the French galleys. Having, however, obtained release in February 1549, he went to London, where he so commended himself to the king and council that he was sent to preach at Berwick-on-Tweed. Thence early in 1551 he was transferred to Newcastle-on-Tyne. While there he seems to have been appointed a royal chaplain; at any rate, he was in 1552 invited to preach before the court in London, and his sermon had considerable effect in modifying the rubric on kneeling at communion. After declining the bishopric of Rochester and the living of All Hallows, London, he was sent in June 1553 on a preaching tour in Buckinghamshire. On the accession of Mary Tudor, however, he returned to the north, and finally, in January 1554, set sail for Dieppe. While there he sent to England a printed 'Godly Letter to the Faithful in London, Newcastle, and Berwick.' From Dieppe he proceeded to Geneva, where he met Calvin, and afterwards to Zürich, to consult Bullinger as to the attitude of Protestant subjects to Catholic sovereigns. That, however, the cautious views of Bullinger did not impress him is evident from the

pamphlet entitled *Faithful Admonition unto the Professors of God's Truth in England*, which appeared shortly afterwards. After returning to Geneva he accepted, in the autumn, a call from the English refugees at Frankfort-on-the-Main; but on account of the intrigues of objectors to his extreme views, he was compelled to leave the town. Finding himself again in Geneva, he there took part in organizing an English congregation; but having in the autumn of 1555 gone to visit his wife and his mother-in-law at Berwick-on-Tweed, he there received such favourable news of the progress of Protestantism in Scotland that he resolved to journey to Edinburgh. His visit was specially opportune, for the Catholic policy of the queen-regent had become so identified with the ambitious aims of France, that many of the leading nobles and barons were, on grounds of patriotism, becoming more and more favourably disposed towards Protestantism. Knox made the most of this turn of good fortune, and before the alarm caused by his success compelled him in July 1556 again to leave Scotland, he had given to Protestantism an impetus that ensured its final triumph. Returning to Geneva he became joint-pastor of the English congregation there, and remained there (with the exception of a few months at Dieppe in 1557) until his final return to Scotland in January 1559. Though deeming it imprudent until then to return to Scotland, he endeavoured to influence the reformers, both there and in England, by a series of hortatory letters and pamphlets, including the famous *First Blast of the Trumpet against the Monstrous Regiment of Women*, which proved such a serious embarrassment to him after the accession of Eliza-

beth. During his residence at Geneva he came more entirely under the influence of Calvin—a fact which had permanent effect in shaping the character of Scottish Protestantism, as regards both doctrine and church government, although Knox was by no means hostile to the order of bishops. On his arrival in Scotland he found the reformers in active resistance to the queen-regent, and by his remarkable sermons he not only greatly strengthened the Protestant enthusiasm, but inaugurated a policy of more thorough-going reform, marked by the wholesale destruction of the so-called 'monuments of idolatry.' When everything seemed going against the reformers, it was his confidence mainly that nerved them to resistance until—owing to Maitland's diplomacy—Elizabeth was induced to send them such aid in men and money as to force the queen-regent to an agreement freeing Scotland from the French soldiers. The victory now remaining with the reformers, Knox, under the new régime, became minister of Edinburgh (1560). The death of the queen-regent was a further blow to Roman Catholicism, and before the arrival of Mary Stuart in Scotland in 1561, Protestantism was formally installed as the established religion of the country. Still, owing to the reluctance of the politicians to accept of that 'devout imagination' of Knox, the *First Book of Discipline*, the predominance of Calvinism in church and state was only partially realized. His distrust of the Protestant leaders Moray and Maitland was increased after each of the famous interviews with the queen which he has so graphically described; for he clearly discerned that even should she be enticed to break with Catholicism, the Prot-

estantism she would sanction would not consort with his Calvinistic ideals. The victory, however, was to remain with Knox, though less on account of his guidance than of the queen's ill-fortune. The Darnley marriage was the first step towards both her ruin and the hopeless overthrow of Roman Catholicism. From this time the fortunes of the queen went steadily from bad to worse. Her association with Rizzio was the second step downwards. Whether Knox had full knowledge of the Rizzio conspiracy or not, he fully approved of the murder; and after the escape of the queen to Dunbar he deemed it prudent to 'pass west to Kyle.' In December following he also obtained leave from the assembly to go on a special mission to England; but after the murder of Darnley he returned, and did his utmost to rouse the nation against the queen and Bothwell. Knox's physical strength was now giving out, and in October 1570 he had a slight stroke of apoplexy. But his zeal was as great as ever. His denunciations of Kirkealdy, who held the castle of Edinburgh for the queen, made it expedient for him to leave Edinburgh for St. Andrews, where he was still able, when well worked up, to 'ding the pulpit in blads' (knock it into shivers). In August 1572 he returned to Edinburgh, and in spite of great weakness continued to preach, the massacre of St. Bartholomew providing him with a theme well suited to his denunciatory eloquence. He was a dying man, however. On November 24 he passed away.

Neither the character nor the work of Knox can be properly judged by present-day standards. Essentially the product of an extraordinary crisis in social and religious history, his personality and opinions were moulded by

circumstances the nature of which we can now but imperfectly realize. Though less narrow and bigoted than his immediate ecclesiastical successors, his religious views were necessarily coloured by the mental thraldom of the preceding centuries, and like that of his opponents, his conduct was characterized by an ecclesiastical arrogance which the majority of the nation would now resent. That he neither 'feared nor flattered any flesh' says much for his courage and his honesty; but his attitude towards secular dignitaries was largely traceable to a mistaken conviction of personal infallibility. He was thus great mainly as iconoclast, and his iconoclastic zeal was too indiscriminate. As a theologian he cannot lay claim to any special eminence, being content to be regarded as the humble disciple of Calvin. As a social reformer he was perhaps unequalled, so far as the mere imposition of disciplinary restraints is concerned; but it was here that—notwithstanding his enlightened views in regard to education—the defects of his qualities were specially manifest, for he left out of account all that related to art and much that related to enjoyment. For the work he undertook, his most remarkable endowment was that of eloquence—eloquence springing from overwhelming conviction. The best mirror, both of himself and of the Protestant aspect of his time, is that supplied by his own *History of the Reformation in Scotland* (1584), the human interest of which bids fair to survive long after the ecclesiastical disputes it embalms have become obsolete.

The standard edition of the *Works of Knox* is that in 6 vols., ed. by David Laing, for the Wodrow Society (1846-8). See also McCrie's *Life of Knox* (new

ed. 1905); P. Hume Brown's *John Knox* (2 vols. 1895); Mrs. MacCunn's *John Knox* (1893); Macmillan's *John Knox, a Biography* (1905); Lang's *John Knox and the Reformation* (1905); Glasse's *John Knox* (1905); Cowan's *John Knox* (1905); and a new ed. of Knox's *Hist. of the Reformation*, by Lord Guthrie (1905).

Knoxville, city, Tennessee, U.S.A., co. seat of Knox co., and one of the most important cities of the state, 165 m. E. of Nashville. Here the beautiful Tennessee marble is quarried, and there are iron, zinc, and copper mines. There are manufactures of wool, cotton, iron, furniture, and clothing. It is the seat of the University of Tennessee. Pop. (1910) 36,346.

Knynetart, tn., Nova Scotia, in Antigonish co., 28 m. E. of Pictou. Pop. 1,500.

Knur and Spell. See TRAP AND BALL.

Knutsford, urban dist., par. and mrkt. tn., Cheshire, England, 6 m. E.N.E. of Northwich, is a favourite residence for Manchester merchants. The town and its inhabitants have been depicted in *Cranford* by Mrs. Gaskell. Several old-world customs survive, and May Day festivities are still celebrated. Pop. (1911) 5,760.

Knutsford, HENRY THURSTAN HOLLAND, VISCOUNT (1825), English politician, was called to the bar in 1849, and practised until 1867—he drafted the Common Law Procedure Acts of 1852 and 1854—when he accepted the position of legal adviser at the Colonial Office. From 1870 to 1874 he was assistant under-secretary for the colonies. He was returned unopposed as member for Midhurst (1874-85), and subsequently sat for Hampstead (1885-8), until he was raised to the peerage as Baron Knutsford. A viscount was be-

stowed upon him in 1895. He was appointed financial secretary to the Treasury in July 1885. In September of the same year he was transferred to the Education Department as vice-president, and retained this position till January 1886. He entered the second Salisbury administration in August 1886 as vice-president of the Education Department; but in January 1887 he succeeded Mr. E. Stanhope as Secretary of State for the Colonies, and was admitted to the cabinet (1887-92).

Knysna, div. and tn., Cape of Good Hope. The division is a long and narrow strip lying along the S. coast. The mouth of the Knysna forms the port of Knysna, 130 m. w. of Port Elizabeth. Pop. of div., 9,000; tn., 1,600.

Koala, or NATIVE BEAR (*Phascolarctus cinereus*), a clumsy and heavily-built marsupial, chiefly arboreal in habits, found in E. Australia, where it inhabits eucalyptus or 'blue gum' trees, is purely vegetarian in habit, and of a general ash-gray colour. The tail is absent, the ears large and fringed, the fur very thick. The body is about two feet long, and the animal, in spite of its clumsy appearance, is an excellent climber. In the fore feet two of the digits are opposable to the other three, and in the hind feet the great toe is placed far back, and is large and broad. Both it and the other four toes are furnished with strong nails, as are also the digits of the fore feet. Cheek pouches are present, and the koala structurally resembles the phalangers, to which it is most nearly related.

Kobdo, tn., W. Mongolia, in 48° N. lat. and 90° 35' E. long., in the Kobdo region or plateau, with a mean elevation of nearly 4,000 ft. Pop. 6,000.

Kobé, tn., Japan. Hondo, on w. shore of Osaka Bay, 16 m. w. of

Osaka. Since 1892 it has formed with Hyogo one town. It was opened to foreign trade in 1868, and Kobé became the foreign residential quarter. Its harbour is deep and capacious. It possesses an imperial shipbuilding yard, and ranks first amongst Japanese ports, both in number of ships—(1909) 2,437 ships of 5,307,114 tons entered and 2,406 vessels of 5,292,322 tons cleared—and in volume of trade; in 1909 the value of the exports was £10,271,273 (the chief being cotton yarns, rice, copper, straw plaita, matting, camphor, porcelain, and food stuffs), and imports £18,806,279, the total trade being over 46 per cent. of that of the Japanese Empire. Pop. 380,000.

Kobeh, OR KOBI, tn., Sudan, 35 m. W.N.W. of El Fasher, formerly the cap. of Darfur.

Kobelyaki, tn., Russia, in gov. of and 100 m. N.N.W. of Ekaterinoslav. Pop. 12,000.

Koblenz, fort. tn., Prussia, cap. of prov. Rhineland, at the confluence of the Rhine and the Moselle, 57 m. by rail s.e. of Kölön(Cologne). The royal palace was built in 1778-85 by the last Elector of Trier (Trèves). There is an imposing monument to the Emperor William I. The town has champagne cellars, piano factories, and paper factories. In 1632 the town was taken by the Swedes, but was stormed by the Imperialists in 1636; in 1688 it was partly destroyed by the French. Pop. (1910) 56,476.

Kobold. See GOBLIN.

Kobrin, chief tn., Grodno gov., S. Russia, 100 m. s. by E. of Grodno city. Its industries include milling, tanning, and brick-making. Pop. 10,000, chiefly Jews.

Koburg. See COBURG.

Koch, also known as PALI or RAJBANSI, aboriginal race of N.E. Bengal and Assam, and the feudatory state of Kuch (Koch) Behar.

The Koch established their dominion after the overthrow of the Aryan kingdom of Kamrup in 1489. They are said to number about two millions.

Koch, ROBERT (1843-1910), German bacteriologist, was born at Clausthal, Hanover. As early as 1876 he isolated the bacillus of anthrax, and some years later proposed a method of preventive inoculation against that disease. In 1882 he demonstrated the bacillus of tubercle, which bears his name; and in the following year, in Egypt and India, in the comma bacillus identified the cause of cholera. Tuberculin (which he prepared in 1891) is of value as a diagnostic agent, but as a remedy for phthisis and kindred human affections it has not fulfilled the high hopes entertained on its introduction. At the date of his death, strangely enough, Koch was at variance with the great majority of those who may fairly be called his pupils. He held that tuberculosis in man is a disease distinct from tuberculosis in cattle and other lower animals, and he denied the possibility of the transmission of that disease from lower animals to man. The balance of evidence is against his view. The reports of the English Royal Commission on Tuberculosis (published in 1904, 1907, 1909, and 1911) prove that the disease is the same in man and the lower animals, and that man and animals can be reciprocally infected with it. The reports also showed that in a large number of cases the disease was transmitted by means of the milk from a tuberculous cow. In 1885 Koch was appointed professor at the University of Berlin, and in 1891 director of the Bacteriological Institute in Berlin. Twice, in 1896 and in 1903, he went to S. Africa to study rinderpest, and in 1897 he went to German E. Africa to study

malaria. He has written *On Cholera Bacteria* (Eng. trans. 1886), *On Bacteriological Investigation* (Eng. trans. 1891), *Investigation of Pathogenic Organisms* (Eng. trans. by Horsley, 1886), and other works.

Kochi, tn., Japan, Hondo, on s.e. coast of Shikoku, 135 m. s.w. of Kobé; is noted for its coral, and for its long-tailed fowls. It is the centre of the Japanese paper-making industry. Pop. 38,000.

Kock, CHARLES PAUL DE (1794-1871), French novelist, was born at Paris. He published about one hundred novels, in which, in witty, vulgar, and realistic fashion, he described low and middle class life in Paris. His life was spent almost entirely in Paris. Among his best works are *Georgette* (1820), *Gustave*, and *Mon Voisin Raymond*. See Trimm's *La Vie de C. Paul de Kock* (1873).

Kochlowitz, tn., Prussia, in Silesia, 30 m. E.N.E. of Ratibor. Pop. (1910) 7,190.

Kodak, a portable photographic camera, of which many forms are made by the Eastman Co., the proprietors. See PHOTOGRAPHY.

Kedama, GENTARO, VISCOUNT (1852-1906), Japanese general, was born at Takuyama, on the island of Sikoku. He took a prominent part in the Hizen revolt (1874) and in the Satsuma rebellion (1877), valiantly holding the castle of Kumamoto. After a journey to Europe (1891) he became (1894) assistant-minister of war, and during the Chinese-Japanese war of 1894-5 was chief of the staff. In 1903 he was appointed home secretary; and as chief of the general staff planned the general operations of the Russo-Japanese war, and especially the battles Liao-yang, Sha-ho, and Mukden.

Kedisk, or KADIAK, isl., Alaska, off Cook Inlet, about 696 m.

w. of Sitka; about 100 m. long by 50 m. wide. Large quantities of furs are exported, and salmon are taken in immense quantities from the Karluk R. in the west, and canned. The island is the home of a distinct species of bear, the largest of existing carnivora. Kodok. See FASHODA.

Kodungalur, or CRANGANORE, tn., Cochin state, Madras, India, 18 m. N. of Cochin. Tradition, probably erroneously, points to it as the scene of the labours of St. Thomas (62 A.D.). In the 9th century settlements were made here by Syrian Greeks and by Jews. The Dutch took it from the Portuguese in 1661. In 1776 it was captured by Tipu, who destroyed it in 1789. Pop. 30,000.

Koesfeld, tn., Westphalia, Prussia, 19 m. w. of Münster. The town manufactures textiles and machinery. Pop. (1910) 9,420.

Koffyfontein, diamond-mining camp, Orange Free State prov., S. Africa, div. of and 30 m. N.W. of Fauresmith. Pop. 5,700 (1700 whites).

Kofu, tn., Hondo, Japan, 80 m. w. by s. of Tokyo. Its chief industry is that of silk. Pop. 50,000.

Kohat, tn., Kohat dist., North-West Frontier prov., India, at the s. base of the Afridi Hills, 37 m. s. by w. of Peshawar, with which it is connected by the Kohat Pass. Pop. 30,000. The district has an area of 2,771 sq. m., and a population of 220,000. There are salt mines. Petroleum and sulphur are found.

Koh-i-nur, a magnificent diamond whose known history begins early in the 14th century. It weighs about 102 carats, and was long the property of the Grand Mogul at Delhi, where Tavernier saw it (1665). The Persians took possession of it (1739); then it passed to the Afghans, and was finally brought to Lahore. On the annexation of the Punjab (1850)

the diamond became the property of the British Crown. The name Koh-i-nur is Persian, and signifies 'mountain of light.'

Kohistan, geographical name applied to mountainous districts of Persia, Afghanistan, and India. In the last-named country it indicates the mountains to the N.W. of India, between the Indus and Chitral valleys, and the region extending from the w. of Sindh into Baluchistan.

Köhler, REINHOLD (1830-92), German author, born at Weimar; studied philology at Jena, Leipzig, and Bonn, and from 1857 was attached to the grand-ducal library of his native place. He excelled as a folklorist. He was also a student of Shakespeare. He wrote *Dantes Göttliche Komödie* (1865) and *Herders Cid* (1867), and edited books of popular tales.

Kohl-rabi (*Brassica cauli-rapa*) is a member of the cabbage family, and is largely cultivated in Italy and Germany on account of its swollen, fleshy, turnip-like stem. This swollen part is of most value when quite young, and has much the flavour of turnip. In England it is little grown.

Kohlräusch, FRIEDRICH (1840-1910), German physicist, was born at Rinteln, and after holding several chairs of physics (e.g. Göttingen, Würzburg, Strassburg) was president of the Imperial Technical College at Charlottenburg from 1895 to 1905. Besides numerous monographs on physical subjects, chiefly in connection with the theory of electrolysis, he has published *Leitfaden der praktischen Physik* (1870; 10th ed. 1905) and *Leitvermögen der Electrolyte* (1898). The former of these is an invaluable text-book, and has been translated into English under the title of *An Introduction to Physical Measurements* (3rd ed. 1894).

Kojetein, tn., Austria, in Moravia, 32 m. E.N.E. of Brünn. Pop. (1911) 6,333.

Kokomo, city, Indiana, U.S.A., co. seat of Howard co., 60 m. N. of Indianapolis. Its industries include glass-making, lumber products, iron and steel, and rubber goods. Pop. (1910) 17,010.

Koko-nor, or KUKU-NOR, lake and region of Central Asia. The lake lies in lat. $36^{\circ} 58' N.$, and long. $99^{\circ} 55' E.$, at an altitude of 9,950 ft., and is surrounded by mountains. It is 60 m. in length by 40 m. in breadth. The region lies between Tibet, China, and the Gobi desert, and is sometimes understood to include not only the basin of Koko-nor itself, but also Tsaidam and the upper valley of the Hwang-ho.

Kokra Wood, a hard wood, very close grained, obtained from the Burmese tree *Aporosa dioica*, belonging to the order Euphorbiaceæ. The term is sometimes applied to the wood of the West Indian leguminous tree *Inga vera*.

Kokura, seapt., Japan, in Kiushiu, about 100 m. N.N.E. of Nagasaki. Pop. 35,000.

Kola, town, Archangel gov., N. Russia, former cap. of the Kola or Russian Lapp peninsula, at the head of the Gulf of Kola, lat. $68^{\circ} 53' N.$, and long. $33^{\circ} 1' E.$ In 1899 it was superseded as capital by the new port of Alexandrovsk or Ekaterininsk, near the mouth of the Gulf of Kola. Pop. 600.

Kola or Guru Nut, the fruit of a tropical African tree, *Cola acuminata*, belonging to the order Sterculiaceæ. The nuts are rather larger than walnuts, and have a very bitter taste. They contain a large quantity of caffeine, and are eaten by the natives as a stimulant, and also to stave off the demands of hunger.

Kolaba, or COLABA. See BOMBAY.

Kolapur. See KOLHAPUR.

Kolar. (1.) Town, cap. of Kolar dist., Mysore, India, 43 m. E. of Bangalore, with manufactures of coarse blankets. Pop. 12,000. The district has an area of 2,845 sq. m., and a population of 730,000. Kolar gold fields had in 1909 an output exceeding 500,000 ounces. They yield about 99 per cent. of the total gold of India. Sugar, silk, and cotton are manufactured. (2.) Freshwater lake on the boundary of Kistna and Godavari districts, Madras Presidency, India. During the monsoon it covers an area of 100 sq. m.

Kolarian, a conventional term first applied in 1866 by Sir George Campbell to numerous hill tribes of Central India (Chota Nagpur, the Vindhya uplands, Mirzapur, etc.), who are regarded by many as the true aborigines of the peninsula, or at least its earliest known occupants. The physical type differs little, if at all, from that of the other inhabitants of the same region; but all speak closely-related dialects of the same stock Kol or Munda language, which differs profoundly both from the northern Aryan (Sanskritic) and the southern Dravidian. In 1901 there still survived ten groups of distinctly Kolarian speech, collectively numbering 3,179,275. The word *kol* is the basis of our word coolie, due to the readiness with which these people lend themselves to the contract system. The distinction between Kolarians and Dravidians is not, however, recognized by several leading anthropologists. They propose the expression 'Dravido-Munda family' as the collective name of both. See Dr. R. Caldwell's *The Languages of India* (1875); E. T. Dalton's *Descriptive Ethnology of Bengal* (1872); Report of the Ethnological Committee of the Central Provinces (1868); W. Crooke's *The North-Western Provinces of In-*

dia, their History, Ethnology, and Administration (1897); A. H. Keane's *Man, Past and Present* (1900); *Census of India, 1901* (2 vols. 1903).

Kelbe, HERMANN (1818-84), German chemist, born at Ellieshausen, near Göttingen; studied chemistry under Wöhler. From 1842 he assisted Bunsen, whom he succeeded in the chair of chemistry at Marburg in 1851, being transferred in 1855 to the University of Leipzig, where he remained till his death. His *Lehrbuch der organischen Chemie*, his contributions to Liebig's *Handwörterbuch der Chemie*, and his editorial criticisms in the *Journal für praktische Chemie*, are among the principal of his publications.

Kolberg, seapt. and seaside resort in Prussian prov. of Pomerania, 2 m. from the Baltic coast, and 76 m. by rail N.E. of Stettin. Formerly capital of duchy of Cassubia and one of the oldest towns in Pomerania, Kolberg was strongly fortified. The industries include iron-founding and machinery-making, sawmilling, tobacco and woollen manufactures, and fishing. Salt is mined in the vicinity. Pop. (1910) 24,909.

Kolding, mrkt. tn., Jutland, Denmark, at mouth of Kolding R., 13 m. by rail w.s.w. of Fredericia. Kolding dates from 1288, when the Gray Friars established a cloister. Pop. (1911) 14,219.

Kolhapur, or KARVIR, cap. of a feudatory state, Bombay Presidency, India, 97 m. w. by s. of Bijapur. The picturesque town contains the remains of several Buddhist shrines dating from the 3rd century B.C. Pop. 55,000. Kolhapur State has an area of 2,816 sq. m., and a population of 910,000. It has manufactures of cottons, woollens, hardware, and pottery, and is a well-governed and progressive state. Iron and stone are mined, and rice, sugar, tobacco, and cotton are grown.

Kolin, tn., Bohemia, Austria, on the Elbe, 38 m. by rail E. of Pragia. It is a centre of the sugar industry, and manufactures chemicals, ironmongery, and beer. Pop. (1911) 16,442.

Kollivan, tn., Tomsk gov., Siberia, 5 m. w. of the river Ob, and 120 m. s.w. of the town of Tomsk. Pop. 12,000.

Kollar, JAN (1793-1852), Slovak poet, born at Mossocz (Thurocz co.), Hungary, was a pastor in Pesth (1819-49), then professor of archaeology at Vienna until his death. His writings did much to awaken the national feelings of the Slovaks in particular, and the sense of community of race among the Slavs in general. The most important of these were *Slávy Dečer* (1816), a series of original sonnets; *Národné Zpiewanky* (1832-3), a collection of Slovak folk-songs; *Dobré Vlastnosti Narodu Slovanského* (1822), a eulogy on the Slavs; and (in German) *Ueber die littérarische Wechselseitigkeit zwischen den Stämmen und Mundarten der Slawischen Nation* (1831).

Kölliker, RUDOLPH ALBERT VON (1817-1905), German-Swiss histologist, born at Zürich, became professor of physiology there (1845-6), and of anatomy at Würzburg (1847-1902). His *Handbuch der Gewebelehre des Menschen* (6th ed. 1898-1902) is still the standard work on the histology of man. He was responsible for the *Challenger Report on Pennatulida* (1870), and published a work on the *Siphonophora* (1853). His interest in general zoology was further attested by the volumes of the *Zeitschrift für wissenschaftliche Zoologie*, started by himself and Von Siebold in 1849.

Kollumerland, comm., Netherlands, in Friesland, 17 m. E.N.E. of Leeuwarden. Pop. (1910) 7,808.

Kolmar. (1.) or COLMAR, tn., Germany, near the l. bk. of Ill, in

Upper Alsace, 40 m. by rail s.s.w. of Strassburg. Kolmar is the seat of a busy manufacture of cottons, woollens, silks, cloth, jute, thread, machinery, and dyeing and brewing. It was in the possession of France from 1680 to 1871. Pop. (1910) 43,808. (2.) or CHODZIESEN, tn., Prussia, 40 m. N. of Posen. Pop. (1910) 7,161.

Köln. See COLOGNE.

Kölnerische Zeitung, a German journal which has appeared for upwards of two hundred years. In 1809 it was suppressed by Napoleon, and was not revived until the expulsion of the French in 1813. The foundation of its popularity and success was laid in 1830, when, during the revolution of that year, it showed great enterprise in obtaining the latest news from France; and its influence was widely extended by Joseph Dumont, who, in 1847, took over the direction of the journal. It has always been an advocate of the Liberal cause, and in later years became the medium for the inspired utterances of Bismarck and his successors in the chancellorship. It was the first German paper to introduce the leading article, and another prominent feature is its full reports of the proceedings in the German Reichstag. It publishes three editions daily.

Kolomea, tn., Austrian Galicia, 43 m. by rail N.W. of Czernowitz, on l. bk. of the Pruth, with petroleum, pottery, and candle industries. Pop. (1911) 40,520.

Kolomna, walled tn., Russia, gov. of and 60 m. s.e. of Moscow. It is the seat of a Greek orthodox bishop, and has tobacco, silk, calico, wool, linen, leather, earthenware, and tile industries, and railway shops. Pop. 22,000.

Kolozsvar (Ger. Klausenburg), tn. and episc. see of Hungary, chief tn. of co. Kolozs in Transylvania, 80 m. E.S.E. of Nagy-Varad (Grosswardein);

Kolyma, was founded by Saxon colonists in 1272; and for ages was the capital of Transylvania. It has two bishops, one of the Unitarian, the other of the Reformed Church. The chief features of the place are its old churches, its citadel (1715), and university (2,200 students). Pop. 50,000.

Kolpino, tn., Russia, gov. of and 13 m. s.e. of St. Petersburg; has government iron works. Pop. 8,500.

Koltsov, ALEXEI VASILIEVITCH (1809-42), 'the Russian Burns,' the son of a cattle dealer at Voronej. He published verses, which were collected in 1846. He is the poet of the steppes and of peasant life.

Kolyma, river of E. Siberia, rising in the Stanovoi range, flowing N.E. for 1,000 m., and discharging into the Arctic Ocean.

Kolyvan. See KOLIVAN.

Kom. See KUM.

Komarno, tn., Austria, in Galicia, 20 m. s.e. of Lemberg. Pop. (1911) 6,142.

Komarom (Ger. *Komorn*), chief tn. of Komarom co., Hungary, at the confluence of the Vág (Waag) with the Danube, 50 m. w.n.w. of Budapest. It was first fortified by Matthias Corvinus, but was refortified in 1805-8; it successfully resisted the Turks in 1594 and 1663, and the Austrians in 1848-9. Pop. 17,000.

Komati, riv., S.E. Africa, rises in the s.e. of the Transvaal, and, crossing part of Swaziland, pierces the Lobombo range at Komati Poort, and enters the sea near Delagoa Bay.

Komatsu, tn., Japan, near N.W. coast of Hondo, 20 m. s.w. of Kanazawa; manufactures silk gauze, and supplies most of the clays for the Terai and Kanazawa potteries. Pop. 12,000.

Komorn, Hungary. See KOMAROM.

Komotau, tn., Bohemia, Austria, 79 m. by rail n.w. of Prague,

at the southern foot of the Erzgebirge. The industries include textiles, paper, brewing, and lignite mining. Pop. (1911) 19,545.

Komura, MARQUIS JUTARO, (1854), Japanese Minister for Foreign Affairs; ambassador to Great Britain, 1906-8. In 1875 he was sent by the government to Harvard University to acquire a modern education, and was the first Japanese student to receive a degree from the university. On his return to Japan, Komura served first in the ministry of justice, and then in the ministry of foreign affairs. Shortly before the outbreak of the war with China in 1894, he was appointed attaché to the Japanese legation at Peking, and was given the governorship of Manchuria during the first Japanese occupation. After the war, he became minister successively at Seoul, Washington, St. Petersburg, and Peking. He returned from Peking to Tokyo in 1900 to become minister of foreign affairs, and conducted the negotiations which preceded the late war with Russia. In 1905 he acted as the Mikado's senior plenipotentiary at the peace conference at Portsmouth, New Hampshire, U.S.A., and signed, with M. Takahira, the treaty of peace. Komura, who was created a baron in 1902, was one of the chief authors of the Anglo-Japanese Agreement, in connection with which King Edward VII. conferred upon him the dignity of Hon. G.C.M.G. In 1911 he was made a marquis.

Konakry, seapt. and cap. of French Guinea, W. Africa, on the island of Tombo, the terminus of a railway to the Niger at Kouroussa.

Kong. (1.) Town, Kong country, French Ivory Coast, W. Africa, in 8° 53' N. and 4° 10' W. It has a trade in cloth and gold. Pop. 15,000. (2.) The supposed Kong Mts., parallel with the Guinea coast of W. Africa, have

been shown by the expedition of Binger (1888) to be non-existent. The district consists of isolated mountain tracts, with peaks attaining 6,000 ft., the whole forming a plateau region.

Kongju, tn., Korea, 35 m. E. by s. of Chemulpo. Pop. 36,000.

Kong mun, tn., China, in Kwang-tung prov., 40 m. S.S.W. of Canton. Pop. 62,000.

Kongsberg, tn., Norwegian co. of Buskerud, on the Laagen, 42 m. w.s.w. of Christiana; has royal silver mines, discovered in 1623, and an arms manufactory. Pop. 6,000.

Konieh, or **KONIA** (anc. *Ico-nium*), tn., Asiatic Turkey, in vilayet of Konieh, 143 m. s. of Angora, in the midst of orchards. From the date of the capture of Nicæa by the crusaders (1097) down to the time of Jenghiz Khan, it was the capital of the Seljuk (Turkish) sultans. Paul and Barnabas on their first missionary journey preached here (Acts 13:51, f.). There are manufactures of carpets and silk. Other products are grain, opium, mohair, and wool. It has a technical college and museum, and is the seat of a Greek archbishop. Pop. 60,000. The vilayet has an area of 39,410 sq. m., and a pop. of 1,070,000.

König, **FRIEDRICH** (1774-1833), German inventor, born at Eisleben in Saxony. With the help of English capital he patented a steam printing-machine (1810), also a cylinder press, which turned out 1,100 copies of the *Times* in an hour. Returning home (1817), he established near Würzburg a factory for printing-presses.

Königgrätz, tn. and episc. see of Bohemia, Austria, 65 m. E.N.E. of Prague, on the Elbe. Here was fought, on July 3, 1866, a battle (also known as Sadowa) in which the Austrians sustained a crushing defeat by the Prussians. Pop. (1911) 11,064.

Königinhof, tn., Bohemia, Austria, near l. bk. of Elbe, 34 m. by rail N. of Pardubitz; carries on cotton and linen manufacture and brewing. Pop. (1911) 15,062.

Königsberg. (1.) Tn., Prussia, cap. of prov. E. Prussia, on the Pregele, 5 m. from the north-eastern end of Frischen Haff, and 25 m. from the Baltic, with which it is connected by a canal to Pillau, its outer port. The second capital and place of residence of the kings of Prussia, Königsberg is the most important town in the N.E. of the monarchy. The university, founded in 1644, was attended by 1,381 students in 1910. Here the philosopher Kant lived and taught. The Gothic cathedral (of the bishops of Samland) was begun in 1333. Industry embraces the making of machinery, iron-founding, printing, the manufacture of tobacco, cloth, linen, amber, sugar, flour, wood pulp, chemicals, etc., sawmilling, oil-seed-crushing, brewing, tanning, and the production of bricks and lime. Königsberg exported corn, timber, flax, hemp, flour, sugar, etc., and imported coal, iron, herrings, and building materials to an aggregate value of about £15,000,000 in 1909. The town grew up round the castle (1255) of the Teutonic knights, and from 1457 it was the place of residence of the grand masters of the order, and from 1525 to 1618 of the dukes of Prussia. Pop. (1910) 245,963. (2.) Town, Prussia, in Brandenburg, 35 m. s. by w. of Stettin. Pop. (1910) 6,123. See Gordak's *Wegweser durch Königsberg* (1904).

König-Schmelz, tn. in N. of E. Prussia, dist. of Memel. Pop. (1910) 6,016.

Königsfeld, tn., Moravia, Austria, 4 m. by rail N.W. of Brünn. Pop. (1911) 13,062.

Königshütte, tn., Prussian Silesia, 5 m. s. by n. of Beuthen,

and 7 m. from the Russian frontier. It has large iron, steel, and zinc works, and stands amidst the coal mines of Upper Silesia. Pop. (1910) 72,640.

Königsmark, PHILIPP CHRISTOPHER, COUNT (1662-94), Swedish officer and associate of Augustus of Saxony, had an intrigue with Sophia Dorothea, wife of George of Hanover (George I. of England). He is supposed to have been assassinated on the discovery of the affair.—**MARIE AURORA** (1670-1728), his sister, was born at Stade in N. Germany; became the mistress of Augustus II. of Saxony, and by him mother of Marshal Maurice of Saxony. From 1697 to her death she was abbess of Quedlinburg.

Königssee, lake in Bavarian prov. of Upper Bavaria, 3 m. above Berchtesgaden, at an altitude of 2,000 ft. It is shut in by mountain (Watzmann, etc.) walls 5,000-6,000 ft. high, is 17 m. in circuit, and 610 ft. deep.

Königstuhl, castle beside the Rhine, Germany, on l. bk., 5 m. s. of Koblenz, at a spot where the territories of the four Rhenish electors (Cologne, Trèves, Koblenz, and Palatine) met. Here, from early ages down to the beginning of the 16th century, the electors sometimes assembled to choose the future emperor.

Königstein, tn., kingdom of Saxony, 22 m. by rail s.e. of Dresden. Its citadel, on a precipitous rock (1,200 ft.), has frequently served as a place of refuge for the royal family—e.g. in 1848. It is used partly as a repository for archives, etc., partly as a state prison. Pop. (1910) 3,924.

Koniscope, an instrument invented by John Aitken to test the purity of the air as regards dust. It consists essentially of an air-pump and a test tube with glass ends. At one end of the test tube is a passage communicating with the air-pump, and

near the other end is a stopcock. The tube being pointed towards the sky or any other source of light, the stopcock is shut, and one full stroke of the pump is made. The inside of the tube being lined with blotting paper kept moist, condensation of vapour at once takes place on the particles, and the resultant colour phenomena are produced. If there is little dust in the air, one stroke of the pump will make the light in the test tube first blue, then green, then yellow; and then a second stroke, blue and green, finishing up with yellow. On the other hand, should the air contain a large quantity of dust, one stroke will not give the whole series of colours, but may stop at the blue. See *Proc. Roy. Soc.* (vol. li. p. 435).

Konitz, tn., Prussian prov., W. Prussia, 81 m. by rail s.w. of Danzig; with sawmills, flour mills, iron foundries, and woollen factories. Pop. (1910) 12,010.

Köniz, comm., Switzerland, canton of and 2 m. s.w. of Bern. Pop. (1910) 7,683.

Konkan, a strip of country about 200 m. in length along the w. shore of the Bombay Presidency. The breadth varies from 1 to 50 m. The country, which is generally level and fertile, consists of rice fields, cocoanut plantations, and salt pans. Its area is 17,000 sq. m. Pop. over 3,000,000.

Konotop, tn., Chernigov gov., S.W. Russia, 85 m. E.S.E. of Chernigov city. From 1635 to 1648 it was the leading Polish frontier fortress. Pop. 20,000.

Konrad von Würzburg. See CONRAD VON WÜRBURG.

Konstantinhafen, tp. and harbour, Kaiser Wilhelm Land, German New Guinea, on s.e. side of Astrolabe Bay.

Konstantinovsk, tn., Siberia, on E. coast, 600 m. N.E. of Vladivostok. Pop. 16,000.

Konstanz. See CONSTANCE.

Koodoo. See KUDU.

Koomassie. See KUMASSI.

Kooringa, tn., Burra co., S. Australia, 90 m. N. by E. of Adelaide. Copper, silver, and lead are mined, and much wheat is grown. Pop. 2,600.

Kootenay. (1.) River, British N. America, rises in the Rocky Mts., and flows at first S., nearly parallel to the Columbia; then after making a loop into Montana and Idaho, flows through Kootenay Lake, and joins the Columbia after a course of 400 m. Throughout its basin gold is found, and there are rich deposits of iron. (2.) Lake, British Columbia, about 60 m. long, and from 1 to 4 m. wide; area, 220 sq. m.

Kopais (anc. *Topolias*), former lake or marsh, Boeotia, Greece, which received the waters of the Cephissus. In 1893, by means of tunnels through the mountains, it was drained, and is now a fruitful and salubrious plain.

Kopek, or COPEK, a Russian copper coin worth the hundredth part of a rouble—about a farthing.

Köpenick, or CÖPENICK, tn., Prussian prov., Brandenburg, 8 m. by rail S.E. of Berlin, on an island of the Spree, with manufactures of shoddy, sealing-wax, carpets, sugar, dye works, saw and flour mills. Pop. (1910) 30,882.

Kopp, HERMANN (1817-92), German chemist, was born at Hanau. After working with Liebig at Giessen, he was appointed, jointly with Will, to the chair of chemistry in 1852, but removed in 1863 to Heidelberg, where he retained the professorship till his death. His principal researches were in physical chemistry. He is also well known for his *Geschichte der Chemie* (1843-75). He edited (from 1847) a section of Liebig's *Jahresbericht* and *Annalen der Chemie und Pharmacie* (1851-71), and wrote *Einführung in die Kristallographie* (1849), and part of a text-book of theoretical chemistry.

Kopparberg, tn., Sweden, gov. of and 60 m. N. by E. of Orebro, 50 m. S.W. of Falun; with lead, zinc, copper, and iron mines.

Kopreinitz, Hungary. See KAPRONCZA.

Köprülü (anc. *Bylazora*), tn., Turkey in Europe, on riv. Varadar, 27 m. S.S.E. of Usküb; has trade in silkworms. Pop. about 15,000.

Köprülü, or KÖPRILLI, an Albanian family of Turkish statesmen, the most notable of whom were: (1.) MOHAMMED (1585-1661), created grand vizier (1656) at the age of seventy, and, at the head of an army remodelled by himself, took Lesbos and Tenedos from the Venetians; fortified the Dardanelles (1657-61); and reduced Transylvania, after capturing the fortress of Grosswarden. (2.) AHMED (1630-76), son of the above, grand vizier at the age of twenty-six, did much to prop up the sinking Turkish state; invaded Transylvania (1663), and though defeated by the Imperialists under Monteucculi at Saint Gotthardt, imposed the peace of Vasvar on the emperor, whereby Grosswarden and Neuhausen were abandoned to the Turks. (3.) MUSTAFA (?1640-91), brother of the above. When the rebellion against Sultan Mohammed IV. burst forth, Köprülü saved the life of the Sultan's younger brother, Soliman III., at whose accession (1660) he was made grand vizier. He assisted in placing Emerich Tököly on the throne of Hungary, drove the Imperialists out of Servia and Bosnia, and in 1690 replanted the Crescent on the bastions of Belgrade. (4.) HUSSEIN (?1620-1702), younger brother of Mohammed, was in 1697 made grand vizier by Sultan Mustafa II. Realizing the inability of Turkey to cope with the Imperialists under Prince Eugène, he concluded the treaty of Carlowitz (1699). See Brosch's *Geschichten aus dem Leben dreier Grosswesire* (1899).

Kopsia, a genus of tropical evergreen trees or shrubs belonging to the order Apocynaceæ, all natives of the Malay region. They bear beautiful cymes of white or reddish bell-shaped or salver-shaped flowers. *K. fruticosa* is the species usually seen in cultivation.

Kopyczynce, tn., Austria, in Galicia, 15 m. s.w. of Tarnopol. Pop. (1911) 7,350.

Korah, an Israelite who rebelled against the authority of Moses and Aaron, and who, with all his following, was destroyed by an extraordinary manifestation of divine power. See Driver's *Introduction*, 59 *ff.*, and commentaries given at article **NUMBERS**.

Koran, the sacred book of Islam, is made up of those revelations which its founder professed to have received from God. Mohammed did not write the Koran himself; it was compiled after his death by his secretary, Zaid-ibn-Thabit, under the orders of the khalifa, Abu Bekr. It is written in Arabic. The book consists of 114 suras, or chapters, which vary in length. In the earliest compositions we discover the fragmentary impassioned utterances of an embryo prophet—appeals to his countrymen to return to the worship of God, 'the Compassionate, the Merciful.' In the second group the unity of the Godhead is proclaimed, idolatry is denounced, and vivid pictures are drawn of judgment, of heaven, and of hell. In the third series Mohammed lays stress on the divine character of his mission. In the next group—Mecca suras—we find a militant Islam appealing to the arbitrament of the sword; and finally, in the Medina suras, Islam triumphant: fasts, festivals, and the pilgrimage to Mecca are instituted, and the slaughter of all 'infidels' is authorized. See *The Kur'an* (translated into Eng-

lish by E. Sale, 1870), and *The Coran, its Composition and Teaching*, by Sir William Muir, of which several editions have been published.

Koranna, nomad half-breed Hottentots and Bushmen, living along the Orange R., and in the north of Carnarvon dist., Cape of Good Hope. In 1882 they revolted, and had to be put down by force.

Korassan. See **KHORASSAN**.

Kordofan, prov., Anglo-Egyptian Sudan, between Darfur and White Nile. It is flat in the N., and very hilly in the S. (Jebel Nuba Mts.). The chief products are groundnuts, cotton, tobacco, and millet; while the principal exports are ostrich feathers, gum arabic, ivory, and ox hides. Area, about 100,000 sq. m. Pop. (est.) 500,000, the most important tribes being the Nubas, Hasanieh, Kababish, and Bagara. Cap., El Obeid.

Korea, CHO-SEN, or DAI-HAN, a country belonging to Japan, which extends S. of Manchuria, between lat. 34° - 43° N. and long. 125° - 130° E., forming a peninsula (600 m. long by 135 m. broad) between the Japan Sea and the Yellow Sea, of about 90,000 sq. m. in area. A range of mountains (highest point, 8,700 ft.), closely following the E. coast, leaves only a narrow tract of land for cultivation. But on the W. the mountains slope more gradually; the valleys are fertile, and generally capable of irrigation; the Yalu, Tai-dong, Han, and other large rivers are navigable for some distance; the coast is indented with many bays and harbours, and is lined with islands; the sea is shallow, and affected by strong tides. The character of the S. coast is more abrupt, with deeper water. On the E. coast harbours are few, and the sea is almost tideless. The thermometer ranges from 100° F.

to below zero; rivers are frozen for months. The rainfall is almost entirely in summer, and varies considerably; the average at Seoul is about 36 in. in the year.

The people are in features, dress, customs, and architecture distinct from the Chinese and Japanese, but affect Chinese literature. The magnificent sea fisheries are left to Chinese, Japanese, and Russians. The people are robust and well made, and are fond of shooting and fishing.

The language is Ural-Altaic. It resembles Japanese in structure, but they have few vocables in common. There is scarcely any Korean literature. To all intents and purposes, Chinese is the written language of the country. The Koreans appear to be a mixture of Caucasian and Mongolian races. Early in the Christian era the country was divided into three kingdoms, called Kokuryö (in the N.W.), Pëkchë (in the s.w.), and Silla (in the E.). The native annals begin 57 B.C., but have little historical value until the second half of the 4th century. At that time Silla conquered Kokuryö and Pëkchë, and annexed the small Japanese province of Imma, or Mimana, in S. Korea. A period of great prosperity followed. Writing and Buddhism were then introduced from China, to whom Korea owes its civilization and arts such as they are. Early in the 10th century Kokuryö was resuscitated under the name of Koryö (Korea), and soon became master of the whole peninsula. In the Chinese Yuan dynasty Korea was a vassal of China, and took part in Kublai Khan's disastrous expedition to Japan at the end of the 13th century. In 1392 the present dynasty was founded, and the country was called Cho-sen. In 1592-7 the Japanese invaded Korea, but were driven out by the Chinese. Chris-

tianity was introduced at the end of the 18th century, and endured terrible persecutions until relations were opened with foreign countries. In 1876 a treaty was made with Japan, in 1882 with the United States, and in 1883 with Great Britain; and since that date treaties have been made with most of the countries of Europe. China's inaction in 1894 led to her war with Japan, and to the latter's declaration of the independence of Korea. The king in 1899 assumed the title of Emperor of Korea, to which he gave the name Dai-han. At the close of 1903 Russian influence was all-powerful in Korea; but the results of the first year of the Russo-Japanese war placed the country entirely under Japanese authority, and by the treaty of Portsmouth, U.S.A., Korea was formally made a suzerainty of Japan.

The opening of the 20th century has considerably developed the trade of Korea. In 1910 the imports, consisting chiefly of cotton goods, grass cloth, kerosene oil, sugar, silk goods, and tobacco, were valued at £4,061,175, including British goods to the value of £485,270; and the exports — chiefly ginseng, beans, pulse, rice, silk, cattle, and hides — at £2,032,825, besides £901,675 of gold. Silver, copper, iron, and more recently coal mines are worked. In 1905 the Japanese took steps to begin the cultivation of cotton on a large scale in Korea. There are extensive salt fields at Kwang-Yang Bay, near Champo. A railroad runs from Chemulpo to Seoul, the capital (30 m.); s. from Seoul to Fu-san (267 m.), from Fu-san to Masan-po, and from Seoul to the Yalu (300 m.), while several branch lines are under construction, notably the line (136 m. long) from Seoul to Gensan, on the E. coast, and the line (174 m.) from Taiden, s.w., to Kunsan and

Mokpo, through districts rich in rice and other grains. The total mileage in 1911 was 674, with a further 310 m., to be completed within five years. They are all Japanese property. Treaty ports (1911)—Seoul, Chemulpo, Fu-san, Gensan, Mokpo, Chenampo, Kunsan, Songchin, Yengampo, Ping Yang, Chungjin, Shinwiji, and Wi-ju. Of these ports Fu-san comes first in total trade, largely owing to its importance as the continental terminus of the Trans-Asiatic railways, and as a point of strategic value. The population is estimated at 13,000,000. See W. E. Griffis's *Korea* (1905); Mrs. Bishop's *Korea and her Neighbours* (1898); Angus Hamilton's *Korea* (1904); Carles's *Life in Korea* (1888); Wolter's *Korea, Einst und Jetzt* (1902); Hulbert's *The Passing of Korea* (1906); Ladd's *In Korea with Marquis Ito* (1908).

Korea, STRAIT OF, separates Korea from Japan, and unites the Eastern Sea with the Sea of Japan. The isl. of Tsu-shima is near the centre, and here in May 1905 the Russian navy was destroyed by the Japanese.

Korets, tn., Volhynia gov., W. Russia, 30 m. w. of Novogradovlinsk. Pop. 10,000.

Korlaks, a Mongolian tribe inhabiting a district of N.E. Siberia, between the Chukches and the Kamchadales. They number about 5,000. See CHUKCHES.

Korigaum, tn., Bombay Presidency, India, 16 m. N.E. of Poona; scene of a victory of the British over the army of the Peshwa, Jan. 1, 1818.

Kormend, tn., Hungary, co. of Eisenburg, 16 m. s. of Steina-manger. Pop. 6,300.

Kornegal, or **KURNAGALLI**, tn., Ceylon, 50 m. N.N.E. of Colombo, one of the ancient capitals of Ceylon and a place of pilgrimage for Buddhists. Pop. 5,000.

Körner, KARL THEODOR (1791-1813), German poet and patriot,

was the son of Schiller's friend Christian Körner, and was born at Dresden. When Prussia roused herself against Napoleon in 1813, Körner joined Lützow's 'wilder verwegener Schar,' or black-uniformed guerilla troop, and fell at Wöbbelin, not far from Schwerin. He occupies almost a sacred place in the hearts of his countrymen by reason of the fiery patriotic songs with which he encouraged his fellow-fighters; they have been collected as *Leier und Schwert* (1814; numerous editions since). He also wrote several plays, such as *Der grüne Heinrich*, *Toni*, *Der Nachtwächter*, and two or three tragedies—e.g. *Zriny* and *Rosamunda*. See *Life* by his father (Eng. trans. by G. F. Richardson, 1845) and by Peschel (1901).

Korneuburg, tn., Austria, prov. Lower Austria, 9 m. N. by W. of Vienna, on l. bk. of Danube. It manufactures textiles and wine, and carries on a large trade in corn and salt. Pop. (1911) 9,058.

Koroit, tn., Victoria, Australia, in Villiers co., 150 m. W.S.W. of Melbourne. Pop. 1,700.

Koroni, seapt., Greece, in Peloponnesus, on w. side of Gulf of Messenia. Pop. (comm.) 8,500.

Körös, riv., Hungary, rises in W. Transylvania, and after a westerly and south-westerly course of 340 m. joins the Tisza (Theiss) at Csongrad.

Korosko, vil., Upper Egypt, on the r. bk. of the Nile, 110 m. s.s.w. of Assuan. It is the starting-place for caravans crossing the Nubian desert.

Körös-Ladany, tn., Hungary, in Bekes co., 46 m. s.s.w. of Debreczin. Pop. 7,000.

Körösmező, tn., Hungary, co. of and 31 m. N.E. of Marmaros. Pop. 9,000.

Korotcha, or **KAROTCHA**, tn., Russia, gov. of and 75 m. s.s.e. of Kursk. Pop. 15,000.

Korotoyak, tn. Russia, gov. of and 50 m. s. of Voronezh, on the Don. Pop. 10,000.

Korsakovsk, tn. on Aniva Bay, Japanese Sakhalin, 100 m. N. by E. of the island of Yezo.

Korsør, seapt. in Sjælland, Denmark, on the Great Belt, 60 m. w.s.w. of Copenhagen. It exports agricultural produce. The poet Baggesen was born here. Pop. (1911) 8,065.

Kortrijk. See COURTRAI.

Korumburra, tn., Victoria, Australia, in Bulu-Bulu co., 65 m. s.e. of Melbourne. Pop. 4,000.

Korvei. See CORVEI.

Kos, Cos, or ISTANKOI, Turkish isl. off w. coast of Asia Minor. Area, 110 sq. m.; pop. 10,000. Chief tn., Ko (pop. 4,000). The island was settled by Dorian colonists. It was noted for its medical school. Hippocrates was one of its natives. The site of the school was excavated by Herzog in 1902-3.

Kosciusko, mt. group of Australian Alps, New South Wales, near head of Murray R. The two highest peaks are Mueller's Peak (7,268 ft.) and Kosciusko (7,336 ft.).

Kosciuszko, TADEUSZ (1746-1817), Polish general and statesman, born at Siechnowice in Lithuania; went to America, where he served under Washington, and became the friend of Lafayette; then returning to Poland (1786), he assisted Poniatowski in the war with Russia, distinguishing himself at Dubienka. On Russia's annexation of Poland he retired to Leipzig. On the outbreak of the revolution of 1794 he raised the standard of independence at Cracow as dictator of Poland, defeated the Russians at Racławice, defended Warsaw for two months, but was defeated and taken prisoner at Maciejowice, though released by the Emperor Paul (1796). After vain endeavours to obtain the

independence of Poland, he settled in Switzerland, where he died. He was buried at Cracow. See *Lives* by Falkenstein (1834), Choazko (1837), and Michelet (1863).

Kosel. See COSEL.

Kösen, wat.-pl. and summer resort in Prussian prov. of Saxony, on the Saale, 20 m. E.N.E. of Wiemar. Pop. (1910) 3,006.

Kösfeld. See KOESFELD.

Kosher, a term in use among the Jews, signifying that an article is clean and lawful, and conforms to the ordinances of the Talmud in its preparation.

Köslin, tn., Prussian prov. Pomerania, 5 m. from the Baltic and 105 m. by rail N.E. of Stettin; has sawmills, tobacco and soap factories, paper mills, brick works, iron foundries, and breweries. Pop. (1910) 23,247.

Kossovo, vilayet of European Turkey, bounded on N. by Bulgaria and Servia; chief tn. Usküb. Area, 12,700 sq. m., and pop. 1,040,000, principally Slava. There are chrome mines, and livestock, fruit, grain, and tobacco are exported. Rice and silk are also cultivated. On the plain of Kossovo ('Field of the Black-birds') the Sultan Murad I. destroyed the Servian empire by defeating and killing the Servian king Lazar in 1389. Sultan Amurath (Murad) II. gained here a great victory over John Hunyady (October 1448).

Kossuth, LAJOS (1802-94), Hungarian patriot and statesman, was born at Monok, co. Zemplin. For publishing reports of the debates of the National Assembly he was sentenced for treason to imprisonment for four years. On his release (1840) he edited the *Pesti Hirlap*, the organ of the national party (1841). Ceasing to be editor (1844), he devoted himself to agitation, and was elected member for Budapest (1847). After the French revolu-

tion of 1848, he demanded, as leader of the Liberals, independence for Hungary, and became minister of finance in the Hungarian ministry formed under Batthyany, issuing the famous *Kossuth Notes*. To meet the revolt of the Croats he demanded 200,000 men and 42 million florins, which were granted with enthusiasm. Challenging Austria for her complicity, he proclaimed the independence of his country, and virtually making himself dictator, carried on the war with immense energy and spirit. After Görgei's surrender at Villagos (1849), Kossuth fled to Turkey, and afterwards visited England (1852-62) and the United States. Finally he settled (1862) in Turin, where he died. He was buried at Pest. See *Memories of my Exile* (1880), by himself; *Hungary and its Revolutions, with a Memoir of Louis Kossuth*, by E. O. S. (1854). Hisson FRANCIS (1841) entered the Hungarian House of Representatives in 1894, and has since then been the leader of the nationalist or independent party. In 1906 he was appointed minister of commerce in Dr. Wekerle's cabinet.

Kosten, tn., Prussia, prov. of and 25 m. s.s.w. of Posen. Pop. (1910) 7,810.

Köstendil. See KÜSTENDIL.

Kostheim, tn., Hesse, Germany, circle of Mainz. Pop. (1910) 7,473.

Kostomarov, NICOLAS (1817-85), Russian historian, was born at Ostragozzi (Voronej); issued works (drama, poems) in the Little Russian dialect; then wrote on the history of the Ukraine, dealing chiefly with the wars of Bogdan Chmielnicki (4th ed. 1884), and embracing *Historic Monographs* (12 vols. 1863-72); and finally turned to general Russian history, with *History of the Old Slav Republics Novgorod and Pskov* (1863), and

Russian History in Biographies (1873 ff.).

Kostroma. (1.) Government, Central Russia, with an area of 32,490 sq. m., and population of 1,644,000. The land is generally flat, with numerous swamps to the N. and sandy stretches to the S. Much of the area is forest land. The Volga traverses the province in a s.e. direction. (2.) Capital of above gov., lies at the junction of the Volga and Kostroma, 200 m. N.E. of Moscow. Chief industries: flax-spinning, candle, wax, and cloth manufacture, tanning, brick-making, distilling, the preparation of tobacco and cement. Kostroma is an important Volga port. Pop. 45,000. (3.) River, Central Russia, trib. of Volga, into which it falls above Kostroma city. Its general direction is from N.E. to s.w., and its length is nearly 200 m.

Kőszeg (Ger. *Güns*), tn., Hungary, Vas co., 55 m. S. by E. of Vienna; famous for its resistance to the Turks in 1532. Pop. 7,500.

Kotah, tn., cap. of feudatory state of same name, Rajputana, India, on r. bk. of Chambal, and 120 m. S. of Jaipur. The town contains a school for the sons of nobles. Muslims are manufactured. Pop. of tn. 34,000. The state has an area of 5,700 sq. m., and a population of 550,000. Opium and grain are exported.

Kotakota, station, Nyasaland Protectorate, Central Africa, on w. shore of Lake Nyasa, 75 m. S. of Bandawe.

Kotayam, or **KOTTAYAM**, tn. in feudatory state of Travancore, Madras Presidency, India, 32 m. S.E. of Cochin. It is the headquarters of the Syrian Christian Church in India. Pop. 17,500.

Kotelnoi. See NEW SIBERIA ISLANDS.

Köthen, or **CÖTHEN**, tn., Germany, duchy of Anhalt, 31 m. by rail s.s.e. of Magdeburg; was the capital of duchy of Anhalt.

Köthen from 1603 to 1847. Manufactures sugar and chemicals, and has maltings, boilerworks, and iron foundries. Pop. (1910) 23,411.

Kotka, seapt., Finland, in Viborg, 85 m. E. by N. of Helsingfors; has sawmills, and exports timber, pulp, pasteboard, and paper. Pop. 11,000.

Kotliarevski, IVAN PETROVITCH (1769-1838), Little Russian poet, born at Poltava; was a civil servant, and afterwards fought in Turkey. The principal work of his life was to put the language of 'Little Russia' on a literary footing, and this he did by publishing a clever travesty of Virgil's *Aeneid* (1798). He also wrote for the stage *Natalka Poltavka* (Natalie of Poltava) (1819), and *Moskal Czarivnyk* (The Soldier as Magician) (new ed. 1862).

Kotonu, the chief seapt. of Dahomey, French West Africa, 20 m. w.s.w. of Porto-Novo. It is the terminus of a railway.

Kottbus, or COTTBUS, tn., Prussian prov. Brandenburg, 71 m. by rail s.e. of Berlin, with manufactures of cloth, woollens, linens, carpets, hats, and jute, brewing, iron-founding, tanning, and distilling. Pop. (1910) 48,644.

Kotur, tn. and fort, Persia, in prov. of Azerbaijan, 110 m. W.N.W. of Tabriz. Pop. 8,000.

Kotze JOHN GILBERT (1850), son of Johannes Kotze of Cape Town, was called to the English bar in 1874, and in 1881 was appointed chief-justice of the Transvaal, but was deposed for refusing to recognize the right of the Volksraad to modify the constitution by a simple resolution, and expelled from office by Kruger and Leyds. Since 1903 he has been a judge of the Supreme Court of South Africa. He has edited Van Leeuwen's *Commentaries on Roman Dutch Law*.

Kotzebue, AUGUST FRIEDRICH FERDINAND VON (1761-1819), Ger-

man dramatist, a native of Weimar; spent his life partly in high administrative offices in Russia and partly in Germany, being for causes unknown banished to Siberia (1800), but soon pardoned. At the same time, he became known as the writer of successful dramas—e.g. *The Stranger* (Eng. trans. 1798), *Poverty and Nobleness of Mind* (Eng. trans. 1799), *Pizarro* (1799), *The Force of Calumny* (1799), *Kindred* (1837), *The Patriot Father* (1830), and many others. From 1790 onwards he waged a bitter feud with Goethe and the romantic school. Sent to Germany by the Russian government to watch and report (1817), he made himself so obnoxious by his satire of liberal tendencies, especially of the *burschenschaft* movement, that he was assassinated at Mannheim by a fanatical student named Sand. His *Sämmliche dramatische Werke* appeared in 1827-9 (44 vols.). See Ch. Rabany's *Kotzebue, sa Vie et son Temps* (1893), and W. Sellier's *Kotzebue in England* (1901).

Kotzebue, OTTO VON (1787-1846), German explorer, son of the preceding, born at Reval; accompanied Krusenstern in his voyage round the world (1803-6), sailed (1815-18) with Chamisso and Eschscholtz to the South Seas, and gave his name to the sound south-east of Bering Strait. In 1821 he published *A Voyage of Discovery into the South Sea and Behring Straits* (Eng. trans. 1821). He made a new voyage in 1823, described in *A New Voyage Round the World in 1823-6* (1830).

Kötzschenbroda, tn., Saxony, Germany, 3 m. N.W. of Dresden. Pop. (1910) 6,445.

Koumiss, or KUMISS, the chief beverage of the nomads of the Russian steppes, is obtained by the fermentation of mares' milk.

Kouropatkin. See KUROPATKIN.

Kousso, the name given to the dried panicles of the female flowers of *Brayera anthelmintica*, a tall, handsome Abyssinian tree belonging to the order Rosaceæ. It bears large panicles of small greenish-purple flowers which are dioecious. Kousso is used in medicine as an anthelmintic for *Tænia solium* and *T. boviscephalus*.

Kovalevsky, ALEXANDER (1840-1901), Russian embryologist, born near Vitebsk; became professor at Odessa and St. Petersburg. His most famous papers are those on the development of a simple ascidian (1866 and 1871), and of *Amphioxus* (1867 and 1877). He also did important work on the development of the brachio-pods (1874), the worm *Sagitta*, and *Balanoglossus* (1866).

Kovalevsky, SOPHIA VASIL-YEVNA (1850-91), better known as Sonja Kovalevsky, Russian mathematician, was born at Moscow; won various great mathematical prizes; in 1884 she was appointed professor at Stockholm. She also wrote various novels—e.g. *Vera Vorontzoff* (Eng. trans. 1895) and *The Sisters Rajerski* (Eng. trans. 1895). See Anna Lettler's *Sonja Kovalevsky* (1892).

Kovel, tn., Volhynia gov., S.W. Russia, 200 m. w.n.w. of Jitomir (Zhitomir). Pop. 18,000.

Kovno. (1.) Government of N.W. Russia, a part of Lithuania. To the N. and N.W. is Courland (Kurland), to the w. and s.w. E. Prussia. Area, 15,692 sq. m. Pop. 1,720,000. The surface is mostly flat. All the rivers belong to the Baltic basin, the most important being the Niemen. Lakes (180 sq. m.) and marshes (660 sq. m.) are numerous. Of late, flax, potato, and fruit culture, as well as market-gardening, dairying, and cattle rearing, have become important industries. It

was at the third partition of Poland, in 1795, that this government fell to Russia. (2.) Capital of above gov., 56 m. w.N.W. of Vilna; a fortress of the first class. The chief industries are soap, candle, match, tobacco, and nail manufactories, distilleries and breweries, tanneries and flour mills; there are also iron foundries, potteries, and lace factories. Kovno is an important commercial centre. An annual fair lasts from June 29 to July 12. Jews number fully a third of the population. Pop. 74,400.

Kovrov, tn., Central Russia, gov. of and 40 m. N.E. of Vladimir. It has brick and cotton manufactures. Pop. 15,000.

Kowelt, KUWEIT, or GRANE, tn., Asiatic Turkey, at the head of the Persian Gulf, 90 m. s. of Basra; is suggested as the terminus of the Bagdad railway. Pop. 25,000.

Kowloon, or KAULUN, peninsula, China, opposite Hong-kong. Part of it was ceded to Great Britain in 1861. In 1898 a lease for ninety-nine years was obtained by the British government of about 376 sq. m., including the port of Kowloon, Mirs Bay and Deep Bay, and the islands of Lan-tao. The harbour of Kowloon has been a free port since 1887. Pop. 100,000.

Kowtow, a ceremony of prostration that is performed by mandarins and others before the emperor of China.

Kozlov, tn., Tambov gov., Central Russia, 45 m. w. by N. of Tambov city. The industries include breweries, brickworks, soap, tallow, and candle manufactories, and cloth-weaving. It exports cattle, meat, grain, eggs, and hides. Two miles from the town is the famous convent of the Trinity, where an important annual fair is held. Pop. 45,000.

K.P., Knight of St. Patrick.

Kra., ISTHMUS OF, the connecting link between the Malay Peninsula and the continent of Asia; a gap between the mountains, and not more than 100 ft. above sea-level. It has been proposed to cut a ship canal through the isthmus.

Krag, THOMAS PETER (1868), Norwegian novelist, born at Kragerö. Principal works: *En-somme Mennesker* (1893); *Ada Wilde* (1896) and *Ulf Ran* (1897); *Kobberslangen* (1895); *Mulm* (1893); *Hjem* (1900); *Gunvor Kjeld* (1904); and the drama *Kong Agon* (1894). He excels in describing the influence of the grim Norwegian coast scenery on those who live near it.

Krag, VILHELM (1871), Norwegian poet, born at Christiansand, brother of Thomas Krag. The best of his works, which are inspired by a somewhat melancholy pessimism, are the volume of *Digte* (1891); the poems *Nat* (1892) and *Sange fra Syden* (1893); the romances *Hjemre* (1895) and *Den Glade Løjtnant* (1896); and the dramas *Vester i Blaafjället* (1893), *De Gamles Julasten* (1894), *Isaac Seehusen* (1900), and *Isaac Kapergast* (1902).

Kragerö, tn., Norwegian co. Bratsberg, on a creek of the Skager Rak, 90 m. s.w. of Christiania; has trade in timber and ice. Pop. 5,500.

Kragujevac, tn., Servia, 60 m. s.s.e. of Belgrade, with an arsenal. Pop. 15,000.

Krain. See CARNIOLA.

Kraiova. See CRAIOVA.

Krakatoa, or KRAKATUA, volcanic isl. (area, 6 sq. m.), Sunda Strait, between Sumatra and Java, E. Indies; was the scene, on the night of 26-27 August 1883, of the most tremendous eruption known to history. The ascending dust, caught in the upper air currents and carried twice all round the earth, gave rise to

a succession of widely-distributed brilliant sunsets in the following winter and spring. See Symons's *The Eruption of Krakatoa* (1884).

Krakau, or KRAKOW, Austria. See CRACOW.

Kraken, a fabulous monster of the northern seas, first described by Pontoppidan (1750) in *History of Norway*.

Kramskoi, IVAN (1857-87), Russian painter, the leader of the thirteen artists who, disgusted with its officialism, left the Russian Academy in a body and founded 'The Society for Wandering Exhibitions' (1870), now the centre of the young Russian school.

Kranidion, tn., Greece, in Argolis, 30 m. s.e. of Argos; the inhabitants are expert divers and sponge-fishers. Pop. 7,000.

Krapf, JOHANN LUDWIG (1810-81), German African missionary and traveller, born near Tübingen; joined the London Church Missionary Society, and went to Shoa (1839), to Mombasa (1843), where he translated the New Testament into Swahili, and to the Wanika (1846). He discovered Mount Kenia, visited Usambara and Ukarmani, and was twice in Abyssinia (1854 and 1867). He compiled a *Vocabulary of Six East African Languages* (1850), and a *Dictionary of the Suahili Language* (1882), and wrote *Reise in Ostafrika in den Jahren 1837-55* (1858; Eng. trans. 1860). See *Missionary Career of Dr. Krapf*, by the Church Missionary Society.

Krasnoe Selo, vil. and summer resort, St. Petersburg gov., N.W. Russia, 16 m. s.s.w. of St. Petersburg city. It has manufactures of earthenware and calico. Here stands an imperial residence. Pop. 3,000.

Krasnovodsk, fortress, Asiatic Russia, on E. of Caspian Sea; is the starting-point of the Transcaspian Ry. Pop. 6,500.

Krasnoyarsk, chief tn., Yenisei gov., Siberia, on the Yenisei, 560 m. N.W. of Lake Baikal. It is the residence of the bishop of Yeniseisk and Krasnoyarsk. A fort, the Krasni Yar, was erected here by Cossacks in 1628. Pop. 33,000.

Kraszewski, JOZEF IGNACY (1812-87), Polish author, born at Warsaw; edited (1841-52) the *Athenaeum* at Vilna. He became editor of the *Gazeta Codzienna* (1860), but in 1863 settled at Dresden. In 1884 he was sentenced to seven years' imprisonment for high treason, but was liberated in 1886. It is upon his novels that his reputation chiefly rests. These include *Poeta i Swiat*—The Poet and the World (1839); *Ulana* (1843); *Morituri* (1874-5); *Resurrecetur* (1876). He also wrote poems, dramas, and numerous historical, literary, and artistic studies. His novels appeared at Lemberg in 102 vols. (1871-5). See Bohdanowicz's *J. I. von Kraszewski* (1879).

Krause, KARL CHRISTIAN FRIEDRICH (1781-1832), German philosopher, born at Eisenberg; was a philosophical contemporary of Schelling and Hegel, and a pupil of the former. He was a voluminous writer on philosophical subjects, and for some time a lecturer in the Universities of Jena (1802-5) and Göttingen (1814-31). The doctrine with which his name is mainly associated, his Panentheism, is an attempt to mediate between pantheism and theism. See *Life*, in German, by Martin (1881).

Kray, comm., Prussia, 3 m. E.N.E. of Essen; has coal-mining. Pop. (1910) 19,362.

Krazinski, ZYGMUNT, COUNT (1812-59), Polish poet, born at Paris. A meeting with Mickiewicz at Geneva (1830) lighted the flame of his poetical inspiration. He lived chiefly at Rome, and ranks high among modern poets of his

nation. One of his most striking works is the dramatic poem *Nieboska Komedyja*—The Undivine Comedy (1843); but his masterpiece is *Irydion* (1836), a poem on the Roman decadence. His works were published at Lemberg (1880-8).

Kreasote. See CREOSOTE.

Kreatin. See CREATIN.

Krefeld, or CREFELD, tn., Prussian prov. Rhineland, 34 m. by rail N.W. of Cologne. The town is one of the finest in the Rhine provinces. Krefeld is the chief centre in Germany for the manufacture of velvets and silks, the annual output of these materials being valued at over £3,000,000. There are also railway repairing shops, engineering works, iron foundries, manufactures of sugar and chemicals, and breweries. Here in 1758 the allies under Ferdinand of Brunswick defeated the French. Pop. (1910) 129,412.

Kremenchug, or KREMENTCHUG, tn., Poltava gov., S.W. Russia, 70 m. s.w. of Poltava city, one of the chief river ports on the Dnieper. Carriage-building, soap, hat, and agricultural instrument making, sugar-refining, tanning, saw-milling, tobacco and saltpetre manufacture, are largely carried on. Its liqueurs and preserved fruits are also famous; and of late the smelting of iron ore has become important. Pop. 63,000.

Kremeneets (Pol. *Krzemieniec*), tn., Volhynia gov., S.W. Russia, 130 m. w. of Jitomir (Zhitomir). Among the industries are piano, carriage, and mathematical instrument factories, and goldsmiths' and silversmiths' work. Tobacco and grain are exported. Pop. 18,000.

Kremlin. See Moscow.

Kremlin Bicêtre, comin., Seine dep., France, 1 m. s. of Paris. Pop. 13,000.

Kremnitz, tn. and royal free city of Hungary, in Bars co., 35 m. w. by s. of Bratislava, celebrated for its silver mines since the middle ages. Pop. 9,000.

Krems, tn., Austria, prov. Lower Austria, on l. bk. of Danube, 40 m. w.n.w. of Vienna, manufactures wine, leather, white lead, and grows fruit. Pop. (1911) 14,385.

Kremsier, tn., Moravia, Austria, on the March, 28 m. by rail s. by e. of Olmütz. Its principal edifice is the summer palace of the prince-archbishop of Olmütz. There is some malting, brewing, and manufacture of sugar. The Constitutional Diet of Austria met here from November 1848 to March 1849. Pop. (1911) 16,523.

Kreutzer, RODOLPHE (1766-1831), French musician and violinist, born at Versailles. An exponent of the Italian school, he was (1790) first violin at the Italian theatre in Paris, and in 1817 *chef d'orchestre* at the Paris opera. He himself composed several operas, and Beethoven's *Kreutzer Sonata* was dedicated to him.

Kreuzburg, tn., Prussian Silesia, 59 m. by rail E.S.E. of Breslau. Birthplace of Gustav Freytag (1816-95). The town has milling, iron-founding, and distilling industries. Pop. (1910) 11,590.

Kreuzer, former Austrian copper coin (100 kr. = 1 gulden), so called from the cross formerly stamped upon it, had a value of one-fifth of an English penny. Until the foundation of the German Empire (1870), kreuzers were current in S. Germany, but the German kreuzer was worth about one-third of an English penny.

Kreuzlingen, tn., Thurgau canton, Switzerland, on Lake Constance, adjoining the town of Constance. Pop. (1910) 6,358.

Kreuznach, tn. and wat.-pl., Prussian prov. of Rhineland, on the Nahe, 28 m. by rail s.w. of Mainz, with saline waters and baths. The manufactures include tobacco, chemicals, leather, vinegar, and glass. The town has a large trade in wine, and there are extensive salt works. Kreuznach is the ancient *Crucinacum*, and Roman remains have been discovered in the neighbourhood. Pop. (1910) 23,193.

Kreuz Zeitung, or NEUE PREUSSISCHE ZEITUNG, a German newspaper founded in 1848, is the organ of the ultra-Conservative party in Prussia. Latterly it has been the principal organ of the Agrarian or Junker party. It has a morning and an evening edition.

Kriegspiel, or THE WAR GAME, invented by a Prussian officer in 1824, is intended to afford a representation of military manœuvres. It is played on contoured maps of a sufficiently large scale to show the main features of the ground, and enable the amount of cover from view and the fire effect to be estimated. The opposing troops are indicated by metal blocks, coloured red and blue, which are made to scale to represent the front of half-battalions, squadrons, and batteries. The game may be played with a minimum number of three persons, one to act as umpire and the other two to command the opposing forces. For every game a scheme must be drawn up which should contain a 'general idea' on which the operations as a whole are based, and a 'special idea,' which will obviously be different for each side. After receiving the scheme, each commander should forward to the umpire a short memorandum giving his view of the operation to be undertaken, and stating in general terms the mode in which he proposes to

carry it out. At the same time he should forward his orders for the day of action. These should be precisely similar, both in form and substance, to those which would be issued in the field, and the players must as a rule be held strictly to them. The framing of orders is perhaps the most valuable training to be derived from war games. After these preliminaries have been carried out, three maps are provided, either in adjoining rooms or separated from one another by screens. At the commencement of the game metal blocks representing the forces on either side will be arranged on their respective maps by the umpire, in accordance with the disposition and orders of the commanders, and on the central or umpire's map the forces of both sides will be arranged. The successful conduct of the game depends principally on the umpire, who gives notice of the commencement of each move, and regulates its length. The game is generally brought to a conclusion when one side has obtained a decisive advantage over the other, or when the bulk of the forces on both sides are in such close contact as to render a decision of the result a matter of too great difficulty. The questions of losses, possibility of movement, and effect of fire are left to the decision of the umpire.

Kriemhild, the heroine of the *Nibelungen Lied*, was sister of Gunther, king of Worms, and wife of Siegfried, possessor of the Nibelungen hoard. Gunther married Brunhild, at whose suggestion Siegfried was murdered by Gunther's vassal, Hagen, who threw the hoard into the Rhine. Kriemhild afterwards married Etzel (Attila), king of the Huns, and when Gunther and Hagen visited her they were put to death.

Kriens, comm., Switzerland, canton of and 2 m. S.W. of Lucerne; has iron and copper works. Pop. (1910) 7,140.

Krilov, Ivan Andreevitch (1768-1844), Russian fabulist, born at Moscow. He was for some time secretary to the governor of Livonia, and held an appointment in the imperial library at St. Petersburg (1812-41). His *Fables* appeared in 1809; Eng. trans. by W. R. S. Ralston (4th ed. 1883).

Krimmitschau, or CRIMMITSCHAU, tn., kingdom of Saxony, near W. frontier, 39 m. by rail S. of Leipzig, the seat of cloth (buckskin) manufacture on a large scale, with wool-spinning, dyeing and stamping, and iron works. Pop. (1910) 28,804.

Kris, or CREESE, a dagger worn in Java and the Malay Peninsula. The blade is usually wavy, though sometimes straight.

Krishna, Hindu god, was the eighth incarnation of Vishnu. The circumstances of his birth and early life are set forth in two modern supplements to the *Mahâbhârata*, called the *Hari-vana-pâtran* and the *Bhagavatapurâna*. In the Krishna of the *Bhagavad-Gita* is represented a great spiritual teacher; but in the popular legend of his dalliance with the Gopis (wives and daughters of cowherds), and in the indecencies of his worship as *Vallabhacharva* we have modern Hinduism in its most depraved form. See Farquhar in *East and West* (1904) and Keane in *Hibbert Journal* (July 1905), where the Krishna myth is for the first time cleared up.

Krishna. See KISTNA.

Krishnagar, munic. tn., Nadia dist., Bengal, India, 55 m. N. of Calcutta. It manufactures artistic clay figures. Pop. 25,000.

Kristiania, cap. of Norway. See CHRISTIANIA.

Kristiansand, tn., Norway, cap. of prov. of same name, on the

Skagerrak, 160 m. s.w. of Christiania; has good harbour, and export trade in timber, fish, and lobsters. Shipbuilding is carried on. The city was founded in 1641. Pop. (1910) 15,154.

Kristiansund, or CHRISTIANS-SUND, seapt. tn., Romsdal co., Norway, 85 m. w.s.w. of Trond-hjem; lies on three islands only protected against the sea on the w. It was so named in honour of Christian vi., who gave it its civic privileges in 1742. The chief export is fish, mainly dried cod. Pop. (1910) 13,012.

Kristianstad, or CHRISTIAN-STAD, cap. of co. of same name in Sweden, prettily situated about 14 m. from the Baltic, on the peninsula Allon in river Helgra. The town has some industries (iron foundries, machinery, manufactoryes, breweries, distilleries, tanneries, etc.) and a lively trade in spirits and agricultural produce. The town was founded by Christian iv. of Denmark in 1614, was ceded to Sweden (1658), and suffered many sieges in the Swedish-Danish wars. Pop. (1911) 11,569.

Kristo Das Pal (1838-84), Indian publicist, born at Calcutta; became assistant-secretary of the British Indian Association (1855), and later (1861) editor of the *Hindu Patriot*. He was a member of the Bengal Legislative Council (1872), and of the viceroy's Council (1883).

Krivoy-Rog, tn., Russia, gov. of and 100 m. N.N.E. of Kherson; has iron-mining. Pop. 10,000.

Krolevets, tn., Chernigov gov., S.W. Russia, 100 m. E. of Chernigov city; has beet-sugar and brick manufactures. Pop. 11,000.

Kronenberg, tn., Prussian prov. of Rhineland, 7 m. by rail s.s.w. of Elberfeld, with steel industries. Pop. (1910) 12,942.

Kronos. See CRONOS.

Kronprinz Wilhelm, a mail steamer of the Nord-Deutscher Lloyd, built in 1901. She is of

15,000 tons register, and 35,000 H.P., with a speed of 23 knots.

Kronstadt, or CRONSTADT. (1.) Town, fortress, naval arsenal, and port in St. Petersburg gov., Russia, on the e. end of Kotlin island, at the head of the Gulf of Finland, less than 20 m. w. of St. Petersburg city, which it protects by sea. To the s. of the town and harbours is the fort of Kronslet. Since the construction of the new maritime canal uniting Kronstadt with St. Petersburg, the largest vessels are able to go up to the quays of the capital. Kronstadt was founded by Peter i. in 1710, and has ever since been the principal naval arsenal of Russia in the Baltic. Pop. 60,000. (2.) (Hung. *Brasso*), royal free tn., picturesquely situated at foot of the Transylvanian Alps, Hungary, 70 m. E. by S. of Hermannstadt; is strongly fortified. Its Gothic Protestant cathedral dates from 1385. It has manufactures of cloth, leather, cement, and candles, also petroleum refineries. In the 16th century it became the centre of Protestantism. Pop. 60,000.

Kroomen, KRU, or CROO, properly Crao, tribe of negroes inhabiting the coasts of Liberia and French Guinea, W. Africa. They are skilful sailors and boat-builders, and are the best labourers in all W. Africa. See Sir H. H. Johnston's *Liberia* (1906).

Kroonstadt, dist. and tn. in N. of Orange Free State, S. Africa. The district is bounded by the Vaal R. on the n. The town is 110 m. s.s.w. of Johannesburg. Pop. tn. 8,000 (white, 3,000).

Kropotkin, PETER ALEXEIEVITCH, PRINCE (1842), Russian geographer and revolutionary, was born in Moscow, and became secretary to the Physical Geography Section of the Geographical Society. In 1871, at the request of

the Geographical Society, he set out to explore the glaciers of Finland and Sweden. The following year, in Belgium and Switzerland, he came under the influence of socialistic and anarchist teachings. On his return to Russia he held secret conferences among the workmen of St. Petersburg. He was betrayed to the authorities, was arrested, and confined first in the fortress of St. Peter and St. Paul, and later in the military hospital of St. Petersburg, whence he escaped in 1876 to England. He proceeded in the following year to Geneva, where he became the moving spirit of the socialistic and nihilistic agitation, and founded its organ, *Le Révolté*. Banished from Switzerland in 1881, Prince Kropotkin was next (1883) arrested at Lyons on a charge of anarchist incitements, and condemned to five years' imprisonment, but was pardoned in January 1886, and conducted to the frontier. He once more sought asylum in England, where he has lived since. His publications include *Researches on the Glacial Period* (1876), *Paroles d'un révolté* (1885), *In Russian and French Prisons* (1887), and *Memoirs of a Revolutionist* (2nd ed. 1907), *L'Anarchie* (1896; Eng. trans. 1897); *Fields, Factories, and Workshops* (1899; 5th ed. 1904); *The Orography of Asia* (1904); *The Desiccation of Asia* (1904); *Ideals and Realities in Russian Literature* (1905); *The Conquest of Bread* (1906); *The Great Revolution* (1908); and *Terror in Russia* (1909).

Krossen, tn., Brandenburg, Prussia, at the confluence of the Oder and Bober, 31 m. S.E. of Frankfort-on-Oder, has manufactures of woollen cloth and hosiery. Pop. (1910) 7,588.

Kroton, Italy. See COTRONE.

Krotoschin, tn., Prussian prov. Posen, 60 m. by rail N.N.E. of Breslau, with a seat of the Prince

of Thurn and Taxis. Here are brickworks, breweries, etc. Pop. (1910) 13,061.

Krûdener, BARBARA JULIANA VON (1766-1824), Russian mystic, born at Riga. She devoted herself to preaching and prophesying. She had great influence with Czar Alexander I., and claimed to have suggested to him the plan of the Holy Alliance. She wrote a romance entitled *Valeria* (1803). See C. Ford's *Life and Letters of Madame Krûdener* (1893), and E. Muhlenbeck's *Etude sur les Origines de la Sainte-Alliance* (1909).

Kruger, STEPHANUS JOHANNES PAULUS (1825-1904), four times president of the South African Republic (1883, 1888, 1893, 1898), was born at Bulhoek in Cape Colony, but his father joined in the great trek of 1836, and with his family settled in the Magaliesberg. In 1852 he accompanied Pretorius to the Sand R., where the Sand River Convention was concluded. In 1857 he was associated with Pretorius in what is known as the Potchefstroom revolt against the dominance of Lydenburg. A raid was made by Pretorius and Kruger into the Orange River Free State, in connection with this movement, in circumstances somewhat resembling those of the subsequent Jameson raid into the Transvaal (1895), and with a like ineffective result. Kruger was actively concerned in the civil war (1861-4), on what was called the 'Government' side, and it was largely on his initiative that the negotiations were entered upon which led to the foundation of the united republic, of which he was elected first commandant-general. The 'Dopper' party nominated Kruger as their candidate for the presidency. After the annexation of the Transvaal by Sir T. Shepstone, Kruger was one of the delegation chosen to proceed to England to present

a formal protest. For some time after his return to the Transvaal, Kruger accepted the pay of the British government, but on his appointment expiring in November 1877, the government refused to reappoint him. This turned him into an irreconcilable. At length the republic was formally proclaimed at Paardekraal, near Krugersdorp, in December 1880, under a triumvirate consisting of Kruger, Joubert, and Pretorius. In 1883 Kruger was elected president, and with General Smit proceeded to England and negotiated the London convention of 1884, which modified that of 1881. By his refusal of the reasonable franchise to the Outlanders, he provoked the Jameson Raid. Negotiations were entered upon between Mr. Chamberlain, on behalf of the British government, and Kruger, which only ended in the Boer 'ultimatum' of Oct. 11, 1899. (See SOUTH AFRICAN WAR.) Kruger sailed from Lorenzo Marques for Europe on Oct. 19, 1900, where he resided till his death. His body was afterwards conveyed back to Pretoria and buried there. He published his *Memoirs* in November 1902. See Sir J. P. Fitzpatrick's *The Transvaal from Within* (1899), and 'The Times' History of the War in South Africa (1900-9).

Krugersdorp, dist. and tn. in the Transvaal, South Africa. The town is 21 m. w.n.w. of Johannesburg. Here the Dutch used to celebrate annually, on Dec. 15, their victory over Dingaan (1836), and also their triumph over the British forces at Majuba Hill (1881). Near here (Doornkop) Dr. Jameson surrendered to the Boers on Jan. 2, 1896. Krugersdorp is a mining centre. Pop. 20,000.

Krumau, or KRUMMAU, tn., Bohemia, Austria, on an isl. in the Moldau, 19 m. by rail s.s.w. of Budweis, with manufacture

of linen, hemp, and paper, and graphite - mining. Pop. (1911) 8,716.

Krummacher, FRIEDRICH WILHELM (1796-1868), German preacher and religious writer, was born at Mörs on the Rhine; was assistant in the Reformed congregation at Frankfurt (1819-23), pastor at Ruhrtort (1823-5), and was translated successively to Barmen (1825), Elberfeld (1834), Trinity Church, Berlin (1847), eventually becoming court chaplain at Potsdam (1853). He was eloquent, imaginative, and thoroughly versed in Scripture. His best-known works are *Salomo und Sulamith* (sermons on Canticles — trans. 1838); *Elias der Tischtbiter* (1828; trans. 1838, etc.); *Elisha* (1835); *Das Passionsbuch (Suffering Saviour*, 1870); *David* (1867; trans. 1870). See his *Autobiography* (trans. 1871).

Krupp, ALFRED (1812-87), iron and steel manufacturer, head of the works at Essen in Prussia, was a native of that town. For many years the main efforts of the Krupps were to cast large blocks of steel; and the profits obtained from the invention of the spoon roller, cast-steel axles, and solid forged railway tyres, were devoted to this object. In 1847 Krupp manufactured the first cannon made of cast steel, a 3-pounder. When the Bessemer process of steel manufacture came into operation in England (1857), with the simultaneous use of the steam hammer, Krupp saw their advantages, and at once adopted both inventions. In 1880 he forged a steel breech-loading gun of 100 tons weight, till then the largest ever cast. The Krupp works are also noted for the manufacture of side-armour for warships. Krupp introduced the process of carburizing the impact face, thus giving the surface a glass-hardness, which shatters the projectile, the plate neither crack-

ing nor flaking. On July 1, 1910, the Krupp works at Essen, Annen, Kiel, and Gruson at Magdeburg employed 68,726 persons, 37,761 of these being in the steel foundry and the gun-testing grounds. Alfred Krupp was succeeded by his only son FRIEDRICH ALFRED KRUPP (1854-1902), who constructed the 105-ton gun for the defence of Cronstadt, and established the Germania Shipbuilding Yard at Kiel. See article, with portraits, 'The Founders of the Krupp Establishment,' in *The Engineering Magazine*, vol. xx., pp. 519-530.

Krusenstern, ADAM IVAN (1770-1846), Russian navigator and traveller, was born at Haggud in Estonia. In 1803 he was entrusted by Alexander I. with the command of a scientific and commercial expedition to the N. Pacific coasts of America and Asia, during which he discovered the Orloff Is. In 1810 he published his *Voyage round the World* (Eng. trans. 1813). He was also the author of numerous works on hydrography, including an *Atlas of the Pacific Ocean*. See *Memoir by Bernhardi* (trans. by Sir John Ross, 1856).

Krusevac, tn., Servia, on the Morava, 37 m. S.E. by s. of Kragujevac. Until 1389 it was the capital of Servia. Pop. 7,500.

Krushevo, tn., Turkish vilayet of Monastir, 23 m. N. by w. of Monastir. Pop. 10,000.

Krypton, Kr, 81·8, is a gaseous element existing in the atmosphere. It was discovered spectroscopically by Sir William Ramsay, and is a colourless gas that liquefies at - 152° C., has a density of 41, is marked by a brilliant green and yellow line in its spectrum, and is chemically inactive.

Kshatriyas. See CASTE.

K.T., Knight of the Thistle.

Kuala Lumpur, cap. of British protected state of Selangor, in

the Malay Peninsula, and chief centre of the tin-mining industry. Rubber is produced. Pop. 80,000.

Kuala Selangor, seapt. at mouth of Selangor, in British protectorate of Selangor, in the Malay Peninsula. Next to Malacca it was the most important stronghold of the Dutch in the Malay Peninsula. The chief exports are tin, rubber, timber, ivory, hides, salt fish, and rattana. Pop. 35,000.

Kuang. See CONGO.

Kuanza. See COANZA.

Kuba, tn., Baku gov., Russian Transcaucasia, 95 m. N.W. of Baku; has a trade in silk, fruit, and rugs. Pop. 16,000.

Kuban. (1.) Russian prov., Caucasus, includes the valley of the Kuban and the N. slope of the Caucasus range as far E. as Elbruz, and the plains of the lower Kuban and the coast of the Sea of Azov. Agriculture is almost entirely in the hands of Cossacks and German colonists. The mountaineers (Karachai, etc.) and the nomads of the plains are a pastoral people, and rear horses. Petroleum, coal, and salt are obtained. Area, 36,645 sq. m. Pop. 2,500,000. The chief town is Yekaterinodar. (2.) (Anc. *Hypanus* and *Vardan*), riv. of Ciscaucasia, Russia, 450 m. long, rises in Mount Elbruz, drains an area of 21,000 sq. m. in N.W. Caucasus, and enters the Black Sea s. of Taman peninsula, and sends one arm N. to the Sea of Azov after a fall of 8,580 ft.

Kubango, or OKAVANGO. See CUBANGO.

Kubelik, JAN (1880), Bohemian violinist, born at Michle, near Prague. He was a pupil of Sevcik, and began to give recitals in 1898; in 1900 made his début in London, and in 1901-2 toured in the United States. Possessing phenomenal technique, he excels in the rendering of works of virtuosity.

Kublai Khan (1216-94), founder of the Mongol dynasty of China, was a grandson of Jenghiz Khan. While his brother Mangu occupied the Mongol throne, Kublai completed the conquest of N. China, or Cathay, commenced by his grandfather, and on Mangu's death (1259) he became 'the Great Khan.' He subsequently made himself master of the southern provinces of China (1276), and an empire of vast extent, including Tartary, Tibet, Burma, and other countries. Japan, however, defied all his efforts at conquest. Kublai was an able and enlightened monarch, encouraging literature, establishing Buddhism as the state religion, but delighting in Oriental magnificence, which Marco Polo has described in vivid language.

Kuchaman, tn., India, in Rajputana, 65 m. w.n.w. of Jaipur. Pop. 13,000.

Kuchan, or KABUSHAN, tn., Khorassan, Persia, 88 m. n.w. of Meshed. Pop. 12,000.

Kuch Behar, feudatory state, Bengal, India, near the Himalayas. Rice, jute, and tobacco are the principal products. Area, 1,307 sq. m. Pop. 570,000. Its capital is Kuch Behar, 270 m. N. by E. of Calcutta.

Kuching. See SARAWAK.

Kuczurmare, comm., Austria, in Bukowina, 7 m. s. by W. of Czernowitz. Pop. (1911) 9,716.

Kudu, an antelope related to the eland, but differing in that horns are absent in the female, while those of the male are curved in a spiral. The tail is much shorter than in the eland, the neck is maned, and the body is marked by narrow vertical white stripes. The common kudu (*Strepsiceros kudu*) occurs in wooded regions from the Cape to the highlands of Abyssinia. The lesser kudu (*S. imberbis*) is confined to Somaliland and its vicinity.

Kuel-hua-chéng, or KUKU-KHOTO, tn., China, prov. Shan-si, 250 m. N.E. of Peking, trade route from Peking to the w., about 40° 46' N. lat. and 111° 40' E. long.

Kuenen, ABRAHAM (1828-91), Dutch Biblical scholar, was born at Haarlem in Holland. In 1853 he became professor of Old Testament theology at Leyden, where he died. Kuenen will rank as one of the great masters in Old Testament criticism. H. Graf, following certain suggestions of Vatke, had ventured, in his *Geschichtliche Bücher des A.T.* (1866), to draw a distinction of origin and date between the historical and legal portions of the *Grundschrift* (i.e. P; see article HEXATEUCH); and Kuenen, in his *Godsdienst van Israël* (1869-70; Eng. trans. *The Religion of Israel*, 1874-5), showed the untenability of the hypothesis, and solved the matter by assigning the whole of the 'priestly' *Grundschrift*, both legal and historical, to a date much later than the 'prophetic' narrative (JE). In pursuance of the method adopted by Baur in his book on early church history, Kuenen began with the literary prophets of the 8th century B.C. as a fixed historical point, and from this worked his way backwards to the earlier stages. Kuenen's superb learning, his brilliant insight, and his fine quality of reverence are displayed in all his works, the chief of which, besides the *Godsdienst* above mentioned, are *Historisch-kritisch Onderzoek naar het Ontstaan en de Verzameling van de Boeken des Ouden Verbonds* (1861-65; Eng. trans. *The Pentateuch and Joshua critically examined*, by Colenso, 1865; *Historico-Critical Inquiry into the Origin and Composition of the Hexateuch*; German by Schultz, 1886-92); *De Profeten en de Profetie onder Israël* (1875; *Prophets and Proph-*

ccy in Israel, 1877); Natural Religions and Universal Religions (Hibbert Lecture, 1882). Kuenen also contributed largely to reviews, especially the *Theologisch Tijdschrift*. See *Jewish Quart. Rev.* (1892), and Kuenen's *Lerensbericht*, by W. van der Vlugt (1893).

Kuen-lun, or KWEN-LUN, a system of mountains forming one of the loftiest ranges in Asia, and constituting the northern wall of the Tibetan plateau. Its general direction is from w. to e.; its length is about 2,300 m. Like the Andes and Himalayas, the main range is continually dividing into several parallel chains. Most geographers, following Richthofen, divide it into three main parts—Western, Central, and Eastern. (1.) The Western Kuen-lun extends from about $76^{\circ} 20'$ to $89^{\circ} 20'$ E. long., from the Pamir to the Tash-davan pass in the Altin-tagh section of the range, where the trade route from the Tarim valley to Lhassa crosses the mountains. This point answers roughly to the west end of the Tsaidam upland basin. (2.) The Central Kuen-lun reaches from about $89^{\circ} 20'$ to 104° E. long., from the Lhassa-Tarim route to the meridian of Lan-chow on the Hwang-ho. It is split into two main chains by Tsaidam. (3.) The Eastern Kuen-lun, lying wholly in China proper, stretches from about 104° to $112^{\circ} 20'$ E. long. from the meridian of Lan-chow to a little E. of Ho-nan city in Ho-nan.

The system is continued from the Nan-shan chain by the mountains of N.W. China (Ku-liang, Ala-shan, and In-shan), to join the highlands of N.E. Asia in the Greater Khingan range. See Sir Sven Hedin's *Scientific Results of a Journey in Central Asia* (1905-1907).

Kufic, or **Oufic**, Arabic letters or characters, used for Moham-

median coins and inscriptions, containing only sixteen out of the twenty-eight Arabic consonants. These letters, in which the Koran was originally written, are distinguished from the Neschi or cursive Arabic, introduced in the 10th century, and still in use for ordinary purposes, and are so called from Cufa, a city near Bagdad, famous for expert writers of these epigraphic characters. The Kufic script was in use for coins from the end of the 7th to the 13th century.

Kugler, FRANZ (1808-58), German art historian, was born at Stettin, and appointed professor in the Art Academy at Berlin (1833). He wrote *Handbuch der Geschichte der Malerei* (1837) from the time of Constantine, which became the standard work on the subject, and was translated into English partly by Sir C. and Lady Eastlake (new ed. by A. H. Layard, 1891), and partly by Sir E. Head (new ed. by Sir J. A. Crowe, 1898); also *Geschichte der Baukunst* (1855-60); *Handbuch der Kunstgeschichte* (5th ed. 1872); and *Geschichte Friedrichs des Grossen* (1840; 5th ed. 1901; trans. with Menzel's famous illustrations, 1844).

K'uh-fu, walled city, Shantung, China, 12 m. N.E. of Yen-chow. About $1\frac{1}{2}$ m. to the N. is the burial-place of Confucius, who was born in the city. A magnificent temple in his honour is visited by pilgrims. Pop. 25,000.

Kuhn, FRANZ FELIX ADALBERT (1812-81), German mythologist, born at Königsberg in Brandenburg; taught (1841) at the gymnasium of Cologne, of which he became the head (1870). One of the founders of comparative mythology, he published *Zur ältesten Geschichte der indo-germanischen Völker* (2nd ed. 1850); *Die Herakunst des Feuers und des Göttertranks* (2nd ed. 1886); *Ueber Entwicklungsstufen der Mythenbildung*

dung (1874). He also published *Märkische Sagen und Märchen* (1842); *Sagen, Gebräuche, und Märchen aus Westfalen* (1859).

Kühne, WILHELM (1837-1900), German physiologist, born at Hamburg; and after working under Virchow at Berlin, became professor of physiology at Amsterdam (1868) and at Heidelberg (1871).

Kullenburg. See CULENBORG.

Kuka, former cap. of Bornu, N. Nigeria, on w. shore of Lake Chad, once the centre of the slave trade with Tripoli. It was completely destroyed by Rabeh in 1898. The town was rebuilt in 1902, and is now one of the principal British stations of eastern Bornu. Pop. estimated at 60,000.

Ku-klux-klan, a secret association founded in the Southern States of the American Union about 1866, for the purpose of preventing the exercise of political rights by the newly emancipated negroes. Congress interfered in May 1870, by passing an Enforcement Act, against conspiracies to deprive the negroes of their rights. As this proved insufficient, in April 1871 the 'Ku-klux Act' was passed, with more drastic provisions; but the trouble was not removed until the Supplementary Civil Rights Act was added in 1875, enforcing full social equality for negroes in theatres, hotels, and public conveyances. See Cambridge Modern Hist., vii. ch. 20 (1903).

Kukukhoto. See KUEI-HUA-CHENG.

Kula, vil., Hungary, in Bač-Bodrog co., 22 m. s.e. of Zombor. Pop. 8,000.

Kulan, KIANG, or DZIGGETAI, names given to a variety of the Asiatic wild ass (*Equus hemionus*) found in Tibet and Mongolia, and distinguished by its reddish colour, and the narrowness of the dark stripe down the back. See HORSE and Ass.

Kulasekharapatnam, tn. in Tinnevelly dist., Madras, India, on Gulf of Manaar, 40 m. N.E. of Cape Comorin. Pop. 20,000.

Kulbarga, or GULBARGA, chief tn. of Kulbarga dist., Hyderabad State, India, 100 m. w. of Hyderabad city. It was (1347-1432) the capital of Hindu and Mohammedan dynasties, and has ruins of palaces. Pop. 30,000.

Kulja, or ILLI, cap. of prov. Kulja or Ili, in Chinese Zungaria, in the valley of the Ili, s.e. of Lake Balkhash. It produces grain, fruits, vegetables, oil, and paper. In the middle ages it was known as Almalig or Almalik. From 1871 to 1881 it was occupied by Russia. Pop. 10,000.

Kulm, tn., Prussia, prov. W. Prussia, on r. bk. of Vistula, 25 m. n. by w. of Thorn; with saw-mills and machinery works. It gives a title to a bishopric. Pop. (1910) 11,720. See KULMSEE.

Kulmbach, tn., Bavaria, prov. Upper Franconia, on White Main, 38 m. by rail N.E. of Bamberg. Kulmbach has breweries, malt-kilns, and textile manufactures. Pop. (1910) 10,731.

Kulmsee, tn., Prussia, prov. W. Prussia, 14 m. by rail N. of Thorn; from 1243 to 1824 the see of the bishops of Kulm. Pop. (1910) 10,612.

Kulturkampf, the name applied to the controversy and struggle between the Prussian state and the Church of Rome. The name signifies, according to Virchow, the great antagonist of the clerical party, the struggle for education and enlightenment; but, according to the clericals, the struggle against education and enlightenment. It arose out of the May Laws passed in 1872 to restrain the activities of the Jesuits and others. A working compromise was eventually arrived at in 1880 and 1882.

Kulu, fertile valley in Kangra dist., Punjab, India, with an area of 1,934 sq. m. Pop. 70,000.

Kum, chief tn. of prov. of same name in Irak-Ajemi, Persia, 80 m. s.s.w. of Teheran. It contains the tomb of Fatima, sister of Imam Riza, and is a popular pilgrim resort. Cotton is cultivated. Pop. 20,000.

Kuma, riv., Russia, forming the boundary of the Caucasus prov. on N.E. It rises on the main chain between the Kuban and the Terek, and has a length of 300 m. Much of its water is drawn off for irrigation, and it finally loses itself in the sands of the steppe.

Kumamoto, city, Kiushiu, Japan, 50 m. E. of Nagasaki, with a much-frequented Buddhist temple. Pop. 62,000.

Kumania, or **CUMANIA**. (1.) Former dist. of Europe, N. of Danube and N.W. of Black Sea, including the present Moldavia, Walachia, and S. Russia. The Cumans belonged to the Turkish stock and invaded Hungary about the 11th century. They were conquered and forced to become Christians in the 14th century. (2.) **GREAT K.**, in Central Hungary, E. of the Theiss. The chief mrkt. tn. is Kardzág-Uj-Szállás. Area, 424 sq. m. Pop. 55,000. (3.) **LITTLE K.**, in Central Hungary, between the Danube and the Theiss. Its largest town is Félegyháza. Area, 1,000 sq. m.; pop. 64,000.

Kumarilia Bhatta, also known as **BHATTACHARYA**, a Brahmin who lived about 600 A.D. He annotated the *Sutras*, taught the Mimamsa philosophy, and distinguished himself by his interpretation of the Vedic texts. He was a reformer of Brahmanism, and a bitter opponent of the Buddhists. He offered himself in voluntary sacrifice.

Kumassi, or **COOMASSIE**, cap. Ashanti, Gold Coast hinterland, W. Africa, about 6° 30' N., some

180 m. by rail from Sekondi, its port on the Gulf of Guinea. In 1874 it was taken by a British expedition under Sir Garnet Wolseley. British expeditions again took it in 1895-6 and in 1900. The town has now become the distributing centre for the whole of Ashanti. Pop. 7,000.

Kumaun, or **KUMAON**, div., United Provinces, India, consisting of the three districts Naini Tal, Almora, and Garhwal. It lies chiefly on the S. slope of the Himalayas, and consists of mountains and forests (Tarai). Tributaries of the Alaknanda and the Gogra drain it. Tea gardens cover 3,000 ac. Its valuable timber includes *sal*, Himalayan pine, cypress, and fir, and there are mines (imperfectly worked) of iron, copper, and lead. The division contains numerous pilgrim resorts, such as Deoprayag and Vishnuprayag. Seized by the Ghurkas at the end of the 18th century, it was annexed by the British in 1815. The inhabitants are Khasias. Cap. Almora. Area, 13,743 sq. m.; pop. 1,200,000.

Kum-bum, Lamaist monastery and temples in the Chinese province of Kan-su, 130 m. W.N.W. of Lan-chou. It is a famous resort of Buddhist pilgrims.

Kumis. See **KOUMISS**.

Kümmel, a liqueur imported chiefly from Riga, is produced from bruised caraway seeds, cumin, and other flavouring bodies. Grain alcohol is usually the base.

Kumta, or **COOMPTA**, seapt., India, on w. coast, about 330 m. S.S.E. of Bombay. Pop. 11,000.

Kunar, riv. rising on S. of Hindu-Kush. Its longest headstream takes the name of the Chitral or Kashkar. The Kabul R. joins it below Jelalabad. The Kunar gives its name to a picturesque and fertile valley in the spurs of the Hindu-Kush.

Kunch, munic. tn., Jalaun dist., United Provinces, India,

80 m. s.w. of Cawnpur. Pop. 16,000.

Kundt, AUGUST (1839-94), German physicist, born at Schwerin. After holding professorships at Zürich (1868), Würzburg (1870), and Strassburg (1872), he succeeded (1888) Helmholtz as professor of physics in the Berlin Physical Institute, where he remained till his death. His name is principally connected with the dust figures produced by sound vibrations—an investigation that led to his determination, along with Warburg, of the ratio of the two specific heats of a gas; the method being recently of the utmost value in deciding the nature of the gases helium and argon. His optical work is also of the highest importance. He wrote *De Luminis Depolarisato* (1864).

Kunene. See CUNENE.

Kunersdorf, vil., Brandenburg, Prussia, 4 m. E. of Frankfurt-on-Oder, where, on Aug. 12, 1759, Frederick the Great of Prussia was defeated by the Russians under Soltikoff and the Austrians under Laudon with tremendous loss. Pop. 5,000.

Kungur, tn., Perm gov., N.E. Russia, 50 m. s.s.e. of Perm city. It has copper and iron mines, and carries on tanning, leather-work, soap and shoe making, iron founding, locksmiths' work, farriery, and engineering. It has an important fair. Near the town are famous caverns hollowed out of alabaster, which is quarried. Pop. 15,000.

Kunigunde, ST. (d. c. 1030), canonized by Innocent III.; was the daughter of Siegfried, Count of Luxemburg, and the wife of the Emperor Henry II. After her husband's death (1024) she entered a convent, founded by herself at Kaufungen, near Kassel. Her day is March 3.

Kunsan, tn., Korea, on w. coast, 110 m. s. of Seoul; a treaty port since 1899. Pop. 12,000.

Kunszentmarton, tn., Hungary, co. Jasz-Nagykun-Szolnok, on the Körös, 72 m. s.e. of Budapest. Pop. 11,000.

Kunti, one of the heroines of the *Mahābhārata*.

Kuopio. (1.) Province, Central Finland, with an area of 16,500 sq. m., of which 30 per cent. is marshes and 15 per cent. lakes, while less than 3 per cent. is under cultivation. Iron is obtained. Pop. 310,000. (2.) Town, cap. of above prov., 200 m. N.N.E. of Helsingfors. It stands on a peninsula in Lake Kallavesi, and is the terminus of a railway from Kotka and the Gulf of Finland. Pop. 15,500.

Kupferdreh, comm., Rhenish Prussia, 11 m. s.e. of Essen; has iron and copper works and coal mines. Pop. (1910) 9,553.

Kupferschiefer, a black bituminous shale, not over two feet in thickness, which occurs at the base of the Upper or Zechstein group of the Permian rocks of Germany. It contains numerous fossil fishes (e.g. *Palaeoniscus*) and remains of plants. It is an important source of copper, being mined near Mansfeld. It is believed that the deposit was laid down in an extensive lake. See Phillip's *Ore Deposits* (1896) and Sir A. Geikie's *Geology* (1903).

Kura, or **KUR**, riv., Russia, the largest of the Caucasus, with a drainage basin of 60,000 sq. m. It rises on N. side of Chaldir ridge, and enters the Caspian Sea after a course of 800 m., and with an average fall of about nine feet per mile. Steamers ply up it as far as Piraza. Sturgeon, salmon, shad, and other fish abound.

Kurdistan, the mountainous country stretching southwards from the riv. Araxes to the plains of Mesopotamia and the mountains of Luristan, and from the Euphrates E. to Urmia in Persia. The Kurds, probably over two millions in number, are an

Iranian people, supposed to be descended from the Medes or the Carduchi; but the admixture of Turkish, Armenian, and Persian blood has produced a variety of types. Generally they are of middle stature, gracefully and powerfully built, with regular features and abundant hair, brown or occasionally black in colour. They are barbarous and cruel, and are notorious for their massacres of Armenians. The Kurds are divided into a large number of small tribes, each governed by a hereditary chief. The majority are Mohammedans of the Sunnite sect. The Yezids, most numerous in the Singarrange, are generally regarded as devil-worshippers. Formerly all were nomads. Those who have taken to agricultural pursuits still often migrate to distant pastures in summer. See Lynch's *Armenia* (1901) and Jackson's *Persia, Past and Present* (1906).

Kurgan, tn., Tobolsk gov., Siberia, on l. bk. of Tobol, 200 m. s.e. of Ekaterinburg, and the first station of the Siberian railway. Pop. 11,000.

Kurgans are ancient sepulchres and grave mounds found in various parts of European Russia and Siberia.

Kuria-Muria, a group of rocky, barren islets off s.e. coast of Arabia, ceded in 1854 to Britain by the sultan of Muscat. They are now attached to Aden, and are leased for guano collection.

Kuriles (Japanese, *Chishima*), chain of small, volcanic, barren, fog-infested islands, belonging to Japan, and stretching N.E. from the N. of Yezo to the s. of Kamchatka. They cover an area of 6,153 sq. m., the chief islands being Kunashiri, Iturup (formerly Staten), Paramushiri, and Shamsu. The highest summit is Chacha-nobiri (7,900 ft.), in Kunashiri. Tomari, in the same island, is the nearest port to Japan.

The inhabitants (Ainus and Kamchadales) are joined by hunters and fishermen during the summer. Pop. 4,400. See Snow's *Notes on the Kurile Islands* (1896).

Kurla, munic. tn., Thana dist., Bombay Presidency, India, on Salsette Isl., 8 m. N.E. of Bombay, with which it is connected by a causeway. It has cotton mills. Pop. 15,000.

Kurland, or COURLAND, Baltic prov. of Russia, between the Gulf of Riga on the N. and the prov. of Kovno on the S. It is 10,435 sq. m. in area, and its surface is mostly level. It has many small scattered lakes, and almost one-third of the surface is covered with forest. Agriculture, cattle-breeding, and sheep-rearing occupy most of the inhabitants. The industries include flax spinning, oilcloth, tanneries, saw mills, oil mills, iron goods, and wagon making. The chief towns are Mitau, the capital (pop. 35,000), and Libau, the chief port (pop. 100,000). The inhabitants are chiefly Letts, and mostly Protestants. A possession of the Teutonic knights since the 13th century, Kurland came under Polish rule in 1561, and was finally united to Russia in 1795. Pop. 735,000.

Kuroki, COUNT (1844), Japanese general, distinguished himself in the Chino-Japanese war of 1894. At first he was superintendent of the mobilization, but afterwards took an active part in the field, and was present at the storming of Wei-hai-wei. In the Russo-Japanese campaign (1904), as commander of the First Japanese Army, he won the victory of 1st May at Kiu-lien-cheng, thus isolating Port Arthur; and was one of the generals in command at Mukden. See RUSSO-JAPANESE WAR.

Kuropatkin, ALEXEI NICOLAEVITCH (1848), Russian general, was born in gov. of Pskov. In the war

against the Bokharans he distinguished himself. After travelling in France and Algeria, in 1876 he went back to Turkestan, to assist Skobelev in the easy conquest of Khokand. In the Russo-Turkish war he became Skobelev's chief of staff, and distinguished himself at Plevna. Under Skobelev he was engaged in the fighting at Geok-Tepe, which was carried by storm. After the death of Skobelev, in 1882, Kuropatkin was engaged in reorganizing the Russian army. From 1890 to 1898 he was governor of Transcaspia, and in the war with Japan (1904) he was made commander-in-chief of the Russian army; but at his own request he was superseded by General Linievitch in March 1905. He is the author of works on the Balkan campaign and the Central Asian wars. He has also written *The Russian Army and the Japanese War* (1909). See RUSSO-JAPANESE WAR.

Kurrachee. See KARACHI.

Kursaal. See CASINO.

Kursk. (1.) Government, Central Russia; area, 17,937 sq. m., pop. 2,960,000. It is mostly flat plain, but in the E. part there are limestone and sandstone hills, rising to 1,110 ft. There are many small streams belonging to the basins of the Don and Dnieper. Most of the soil is black earth. Wheat, millet, hemp, tobacco, beetroot are raised. The cattle are celebrated. No part of Russia is more noted for its orchards and honey. The region of Kursk seems to have been first brought under Russian rule by Oleg, Grand-Prince of Kiev, in 884; from the 14th to the 18th century it formed part of what was called the Russian or Muscovite Ukraine (or frontier) in opposition to the Polish Ukraine, which adjoined it on the w. and s.w. In 1797 the government of Kursk was formed. Almost all the people belong to the Rus-

sian race and to the Orthodox Church. (2.) Town, cap. of above gov., 330 m. s. by w. of Moscow. The industries include carriage works, tobacco, soap, and wax-candle manufactures, distilleries and breweries, tanneries, iron foundries, and flour mills. Kursk suffered much from the rioting and outbreaks which followed the close of the Russo-Japanese war in 1905. Pop. 57,000.

Kurtz, JOHANN HEINRICH (1809-90), German church historian, was born at Montjoie, near Aachen. From 1850 to 1870 he was professor ordinarius of church history at the universities of Halle and Bonn. His works have enjoyed great popularity as academic text-books, especially the *Lehrbuch der Kirchengeschichte* (1849; new Eng. trans. 1888-90). He also published *Astronomie und Bibel* (1842; New York, 1857); *Lehrbuch der heiligen Geschichte* (1843; trans. 1855); *Christliche Religionslehre* (1844); *Biblische Geschichte* (1847; Eng. trans. 1867); *Geschichte des alten Bundes* (1848-55; trans. 1863); *Der A.T. Opfercultus* (1862; trans. 1863); *Abriss der Kirchengeschichte* (15th ed. 1901).

Kuruman, station in British Bechuanaland, 120 m. N.W. of Kimberley, is a settlement of the London Missionary Society.

Kurume, tn., Japan, in Kiushiu, 55 m. N.N.E. of Nagasaki. Pop. 36,000.

Kus, tn., Upper Egypt, on the E. bank of the Nile, 22 m. s. of Keneh. Pop. 11,000.

Kushiro, seapt., Japan, on E. ct. of Yezo, 210 m. N.E. of Hakodate. The chief industries are tinned fish, timber, paper, and matches. The port is open to foreign trade. Pop. 16,000.

Kushk, fort post, just within the Russian frontier, less than 90 m. N. of Herat. The terminus of the s. branch (Merv-Kushk) of the Russian Central Asiatic Ry.

is only 12 m. s. of Kushk at Chahil Dukteran.

Kusi, Kosi, or Koosy, riv., N. Bengal, India; has its source in the Himalayas of Nepal, runs s.w., s.e., and finally s., and enters the Ganges 30 m. N.E. of Bhagalpur. It is subject to floods. Length, 325 m.

Kuskoquim, second largest river in Alaska, between 500 and 700 m. long, flows s.w. into Kuskoquim Bay.

Küssnacht, vil., Switzerland, 6 m. E.N.E. of Lucerne, at N. end of Lake Lucerne; is associated with the romance of William Tell and Cessler. Pop. 3,600.

Kustanaisk, tn., Turgai prov., Russian Central Asia, on Tobol R., 400 m. N. of Turgai. First called Nikolaievsk, it has grown up since 1871. Its industries include tanneries, potteries, and tallow manufacture. Pop. 15,000.

Küstendil, or KÖSTENDIL, tn., Bulgaria, 45 m. s.w. of Sophia. It is the seat of a Greek Orthodox archbishop. Fruit and vine culture is carried on, and there are warm mineral springs. Pop. (1910) dist., 232,184; tn., 12,000.

Küstenjì. See CONSTANTA.

Küstenland, div. of Austria comprising the three crown-lands of Görz and Gradisca, Istria, and Trieste. Chief tn., Trieste. Pop. (1911) 894,457.

Küstrin, first-class fortress and tn., Prussian prov. Brandenburg, on r. bk. of Oder, at confluence of Warthe, 52 m. by rail E. of Berlin. Beer, hardware, and cigars are manufactured. Pop. 17,596.

Kutaih, or KUTAYA, tn., Asia Minor, 75 m. S.E. of Brusa; is surrounded by gardens and orchards. Carpets and pottery are manufactured, and opium is grown. Pop. about 30,000, mostly Turks.

Kutais. (1.) Russian gov., Transcaucasia, extends N. from the Turkish frontier round the E. end of the Black Sea. The

interior is exceedingly mountainous, while the coast is marshy and unhealthy. Manganese ore, coal, copper, and galena are mined. Forests cover a large part of the surface, and timber, especially walnut, is exported. Good tobacco is grown, and fruit is abundant; olives in the south. Tea has been cultivated during the last ten years. The ports are Batum, Poti, and Sukhum Kali. Area, 14,084 sq. m. Pop. 1,000,000. (2.) Town of above gov., on the Rion, 110 m. w. by N. of Tiflis; is supposed to be the Kutatision of the Argonauts. In the 5th century A.D. it was destroyed by the Persians. The present town has been built within the last half-century. Pop. 40,000.

Kutch. See CUTCH.

Kutno, tn., Warsaw gov., Russian Poland, 75 m. w. of Warsaw city. It has breweries and distilleries. Pop. 11,000.

Kuttenberg, tn., Bohemia, Austria, 30 m. by rail E.S.E. of Prague. The manufactures include tobacco, sugar, liqueur, cotton, and calico. In the middle ages silver was mined. Pop. (1911) 15,671.

Kutusov, MICHAEL ILARIONOVITCH (1745-1813), Russian fieldmarshal, served in the Turkish wars (1770, 1788-92), distinguishing himself at Shumna, Otchakov, Hadji-Bei, Bender, and Ismail; and in 1805 commanded an army corps against the French, leading at Austerlitz. In 1812 he was commander-in-chief of the Russian army. See *Life*, in French, by Michailovsky - Danilevsky (1850).

Kuty, tn. of Austrian Galicia, 35 m. w. of Czernowitz. Morocco leather is manufactured, and pitch, tar, and resin are extracted. Pop. (1911) 11,715.

Kuvera, the Hindu god of wealth.

Kuwana, tn., Japan, in Hondo, 50 m. E. of Kioto. Pop. 21,000.

Kuyper, ABRAHAM (1837), Dutch statesman and author, born at Maassluis; became pastor of the Reformed Dutch Church (1863). He also took active part in politics, and in 1901 was appointed prime minister, as leader of a coalition of Calvinists and Roman Catholics. He has edited *De Standaard* (1872) and *Heraut* (1878); founded the Free University of Amsterdam (1880), and in 1886 the Free Reformed Church. His chief work is the editing of *Encyclopedia of Sacred Theology* (1901) and of the works of Johannes à Lasco (1866). He has written *Calvinism*, *The Incarnation*, *The South African Crisis*, and many other works.

Kuznetsk. (1.) Town, Saratov gov., E. Russia, 115 m. N. by E. of Saratov city. The industries include tanneries, boot and glove factories, leather-dressing, harness-makers, wheelwrights, joiners', and bushel-makers' workshops. Pop. 24,000. (2.) Town, Tomsk gov., Siberia, over 200 m. S.E. of Tomsk, in the mining region of the Kuznetski Ala-tau. Pop. 9,000.

Kuala Lumpur. See KUALA LUMPUR.

Kwang-chau-fu. See CANTON.

Kwang-chau-wan, bay on E. coast of Lei-chau peninsula, Kwang-tung, China; the harbour, 20 m. long and from 1½ to 6 m. broad, is completely landlocked. The bay, with the adjoining coast, was leased to France in 1898.

Kwang-hsu (1871-1908), emperor of China, born in Peking; succeeded to the throne in 1875. He owed his position to the intrigues of the Empress Tze-Hsi, his aunt, who held the regency during his minority. She again made herself regent in September 1898, and up to his death Kwang-hsu was to a great extent under her influence.

Kwang-si, inland prov. of S. China, borders with Kwang-tung

and Tong-king on the S., and Yün-nan on the W. Area, 78,250 sq. m.; 480 m. long by 300 m. broad. Its eastern half is by far the more important, the western half being thinly inhabited. The chief exports are cassia, sugar, tobacco, and rice. Part of the province is inhabited by Shans. Kwei-lin-fu is the capital, and Wu-chau and Nanning are treaty ports. Lung-chau is open to trade with Tong-king. Pop. 5,200,000.

Kwang-tung, maritime prov. of S. China, borders on the E. with the China Sea, and on the S. with the Gulf of Tong-king. Area, 99,970 sq. m. It is a semi-tropical country, containing the lower basin of the west, north, and south rivers, which combine to form the delta of Canton, together with the basin of the Han R., which has its mouth at Swatow. Rice, tea, sugar, silk, porcelain, wood and ivory carvings, furniture, grass mats, paper, and embroideries constitute its chief industries. Oranges, bananas, and subtropical fruits, salt and fresh water fish, shell-fish, tobacco and vegetables, coal and iron, are among its other products. Cap. Canton. Pop. 32,000,000.

Kwang-yen, cap. of prov. Kwang-yen, French Indo-China, 60 m. E. of Hanoi, and 6 m. from the sea, on the N. arm of Song-koi delta. It is accessible to the largest vessels at all states of the tide. It is the sanatorium of Tong-king. Pop. est. at 40,000.

Kwanza. See COANZA.

Kwei-chau, inland prov. China, borders with Sze-chuen on the N. and Yün-nan on the W. Area, 67,160 sq. m.; a limestone region, with an altitude of 5,000 ft. in the W., falling gradually to 2,000 ft. in the E. The population is very sparse, and much land is uncultivated. Mineral resources include gold.

silver, copper, tin, lead, quicksilver, and coal. Besides the Chinese population, there are Lelos in the N.W., Shans in the S., and Miaotzu in the E. Opium is the all-important product, serving as currency for export. The wax-producing insect is exported to Hu-nan. Kwei-yang-fu is the capital. Pop. 7,000,000. See Hosie's *Three Years in West China* (1897).

Kwei-yang-fu, cap. of prov. Kwei-chau, China, 190 m. N. by W. of Canton; is of great commercial importance. Coal mines W. of the town.

Kwen-lun. See KUEN-LUN.

Kyd, or **Kin**, THOMAS (?1557-?95), English dramatist, was born probably in London, and was the author of several successful tragedies of the blood-and-thunder school. The best known is *The Spanish Tragedy* (printed 1594), one of two plays dealing with the life of Hieronimo (Jeronimo), a Spanish marshal. Ben Jonson and others ridiculed his bombastic style. The Ur *Hamlet* is attributed to him. See *Works*, ed. by Boas (1901).

Kyffhäuser, wooded hill (1,450 ft.) in German principality of Schwarzburg-Rudolstadt, 35 m. by rail N. of Erfurt, with ruins of a 10th-century castle. German legend tells how the Emperor Barbarossa (Frederick I.; though the story was originally associated with Frederick II.) sits sleeping in the heart of the hill, but will one day, when his country is in desperate straits, awaken and restore her to glory and power. A gigantic monument to the Emperor William I. was erected on the hill in 1896.

Kyle, anc. dist. of Ayrshire, Scotland, separated from Cunningham in the N. by the Irvine, and from Carrick in the S. by the Doon.

Kyles of Bute, sound between the N. end of island of Bute and

Argyllshire, Scotland, with beautiful scenery.

Kyneton, tn., Dalhousie co., Victoria, Australia, 53 m. N.N.W. of Melbourne. It has a school of mines, and makes agricultural implements. Pop. 3,400.

Kyōsai, SHO-FU (1831-89), Japanese painter, who excelled in political caricature; this led to his frequent imprisonment during the revolutionary period of 1867. A number of his works dealing with Japanese life are in the British Museum. He published several books of drawings; the last, *Kyōsai Gwaden* (1887), contains an autobiography. See Mortimer Menpes's 'Personal View of Japanese Art,' in *Magazine of Art* (1888).

Kyoto. See KIOTO.

Kyrie Eleison ('Lord, have mercy'), liturgical phrase used in the worship of the Roman Catholic Church. It follows immediately after the introit, and is sung three times, then *Christe eleison* three times, followed again by *Kyrie eleison* three times. Its Anglican equivalent is used in morning and evening prayers, the Litany, and after the recitation of each of the ten commandments.

Kyrie, JOHN (1637-1724), 'the Man of Ross,' as Pope calls him in his *Moral Essays*, was born at Dymock, Gloucestershire, and lived nearly all his life at Ross, Herefordshire. He devoted the greater part of his income to the building of churches and hospitals, and his time to the welfare of his neighbours. The Kyrie Society was founded by the Misses Hill in 1877, for the purpose of bringing 'sweetness and light' into the lives of the poor.

Kyshtym, mining and iron-working centre of Perm gov., E. Russia, on E. side of Urals, 50 m. N.N.W. of Chelyabinsk; is composed of two settlements, Upper and Lower. Pop. 13,000.

L

L is called a side consonant, because the breath passage is blocked by the tongue in the middle, but not at the side: its channel is the side passages. There are many varieties even of the voiced *l*: for example, the English and French sounds are distinctly different, and three pronunciations of Latin *l* have been distinguished. There is a voiceless *l* in Welsh, which is written *ll* (*Llangollen*). In English the sound has become silent in many words ('palm,' 'would,' 'walk'). In form L closely resembles the early Semitic sign; the lower curve in *ל* is an Aramaic addition; the right-hand stroke of *א* was at first quite short, and that form is a modification of L. The Semitic name *lamed*, Greek *lambda*, means 'goad.'

L, as a symbol, is used in numerals for 50, and with a line drawn above it (L) for 50,000; in commerce, for a pound or pounds sterling.

L.A., Law Agent, and Literate in Arts.

Laager, South African wagon camp; first adopted for defensive purposes by the Dutch pioneers while *trekking* or travelling through a hostile country.

Laaland, or **OLLAND**, Danish island in the Baltic, s. of Sjaelland; area, 444 sq. m. Length is about 36 m.; its breadth varies from 10 to 17 m. The coast is much indented, the land relatively low, but very fertile. Cap. Maribo. Pop. (1911) 74,161.

Laar, or **LAER**, PIETER VAN (c. 1613-74), Dutch painter, called 'Bamboccio' and 'Snuffelaer,' was born at Haarlem; studied and painted at Rome until 1639.

He painted chiefly rural fairs and hunting scenes, pictures technically known among the Italians as *bambocciate*, hence his appellation. Examples are to be seen in the Louvre (Paris) and the galleries of Dresden, Vienna, and Kassel.

Labadie, JEAN DE (1610-74), French mystic, born at Bourg, near Bordeaux; was in turn Jesuit preacher, secular priest, and Huguenot pastor at Montauban and Geneva. Although accused of immorality and sedition, he became famous for his eloquence. Expelled by the Synod of Dort, he founded the sect of Labadists. He wrote some thirty doctrinal works. See the *Eucleria* of Anna Maria von Schurmann.

La Barca, tn., Jalisco state, Mexico, E.S.E. of Lake Chapala, and 90 m. by rail S.E. of Guadalajara. Pop. about 10,000.

Labarum, the name given to the imperial standard in the ancient Roman army after the time of Constantine (306-337 A.D.), by whom it was introduced in place of the Roman eagle. It consisted of a long staff, crossed by a transverse beam, from which hung a banner of purple silk, embroidered with the likenesses of the reigning monarch and his children. At the upper end of the staff was a golden crown, encircling the monogram composed of the cross and the initials of the name of Christ.

Labdacus, in ancient Greek legend, was a king of Thebes, the son of Polydorus, father of Laius, and grandfather of Oedipus. See the works of Eschylus, Sophocles, and Apollodorus.

Labé, LOUISE, née CHARLY (1526-66), styled 'la Belle Cor-

dière,' French poetess, was born near Lyons, and married Ennemond Perrin, a ropemaker—whence her sobriquet. She was famous alike for her beauty and her impassioned poetry, and composed sonnets, elegies, and dialogues, entitled *Le Débat de Folie et d'Amour*, translated into English (1608) by Robert Greene the poet. She was a remarkable linguist, writing idiomatically in Latin, Italian, and Spanish. Her works were first published at Lyons in 1555. See De Ruolz's *Discours sur la Personne et les Ouvrages de Louise Labé*, Nicéron's *Mémoires* (1727-40), and Boy's *Recherches sur la Vie et les Œuvres de Louise Labé* (1887).

Label, or **LAMBEL**, in heraldry, is the mark of cadency of the eldest son. It consists of a fillet, from which hang three short teeth or squares. Formerly, the number of these pendants was greater—five, or even more—and the label was placed at the very top of the shield. In modern times it is borne somewhat lower, and unconnected with the edges of the shield, though always *in chief*. The label is sometimes called a *file*, and then the pendants are designated *labels*. These are sometimes charged—*e.g.* in the arms of the younger members of the royal family—to distinguish their coats from that of the Prince of Wales, whose label—as that of the eldest son—is always plain.

Labellum, a name given to one of the lobes of the perianth in the flowers of orchids and certain other plants.

Labeo, **MARCUS ANTISTIUS**, a famous jurist in ancient Rome. His father was one of the conspirators against Julius Cæsar, and committed suicide after the battle of Philippi. Like his father, the younger Labeo was a republican, and as such was regarded with disfavour by Augus-

tus. He is said to have written four hundred books, quotations from which are to be found in Justinian's Digest. See Lenel's *Palingenesia Juris Civilis* (1889), and Roby's *Introduction to the Study of Justinian's Digest* (1884).

Laberius, **DECIMUS** (c. 107-43 B.C.), a Roman knight, famous as a writer of mimes or burlesque dramas, who had the courage to point his satire against Cæsar. His writings were highly spoken of for their wit and force. Only fragments remain, which are to be found in Ribbeck's *Comicorum Romanorum Fragmenta* (1898).

Labiana, [comm., Spain, prov. of and 16 m. s.e. of Oviedo; has coal, iron, and copper mines. Pop. 8,000.

Labiatæ, a natural order of dicotyledonous plants, a large number of which are remarkable for their fragrance of flower and leaf. The plants belonging to the order, of which there are over 120 genera and 2,500 species, are distinguished by having flowers with irregular two-lipped corollas, the lower lip being three-lobed, four-celled ovaries, single styles, square stems with opposite leaves, and the stamens are two or four in number. Among the genera are *Prunella*, *Melittis*, *Calomintha*, *Nepeta*, *Stachys*, *Lamium*, *Betonica*, *Ajuga*, *Teucrium*, *Oriaganum*, *Thymus*, *Mentha*, and *Salvia*.

Labiche, **EUGÈNE MARIN** (1815-88), French dramatist, was author or part author of more than a hundred vaudevilles, and for many years one of the most popular dramatists in France. He was born and died in Paris, where his first play was produced in 1838. Much of his best work was done in collaboration with such men as Delacour, Dumanoir, Clairville, Duru, Legouvé, Barrière, and Augier. A complete collection of his plays—of

which perhaps the best known are *Le Chapeau de Paille d'Italie* (1851), *Le Voyage de M. Perrichon* (1860), *La Poudre aux Yeux* (1861), *La Cagnotte* (1864), *Le Choix d'un Gendre* (1869), *Le Plus Heureux des Trois* (1870)—was published in 10 vols., in 1878-9. See Jules Claretie's *Eugène Labiche*.

Labienus, TITUS ATIUS, was tribune of the *plebs* at Rome in 63 B.C., when, in pursuance of the programme of the democratic party led by Julius Cæsar, he prosecuted Rabirius for the murder of his uncle. When Cæsar went to his provinces in Gaul in 58 B.C., Labienus accompanied him as one of his lieutenants, in which capacity he earned great distinction. When the civil war against Pompey broke out, Labienus deserted Cæsar and took Pompey's side, but was killed at the battle of Munda in 45 B.C.

Lablache, LUIGI (1794-1858), operatic basso, was great alike as an actor and a vocalist. He studied at the Conservatorium in Naples, where he made his first appearance in opera (1812) in Fioravanti's *La Molinara*. He visited Paris and London (1830), and for many years made an annual appearance in these cities. Lablache had a voice of extraordinary volume and quality, with a compass of two octaves, from E^b below the bass stave to E^b above. Mercadante wrote for him *Elisa e Claudio*; Bellini, *I Puritani*; and Donizetti, *Don Pasquale*. His greatest creation was Dr. Bartolo in *Il Barbiere*.

Labori, FERNAND GUSTAVE GASTON (1860), French advocate, was born at Rheims. He defended the assassin Duval, Pini the anarchist, and the dynamiter Vailant. Labori won celebrity by his brilliant defence of Zola, who was charged with libelling the French executive and army (Feb. 1898), and by his conduct of the Dreyfus

appeal at Rennes. He was counsel for the defence in the Humbert trial in 1903. Labori is editor-in-chief of the *Grande Revue*, and he has published the *Répertoire Encyclopédique du Droit Français*, in 12 vols.

Labouchere, HENRY, BARON TAUNTON (1798-1869), British politician, entered Parliament as a Whig in 1826; was M.P. for Taunton (1830-59); Chief Secretary for Ireland (1846-7); President of the Board of Trade (1839-41 and 1847-52), carrying the Navigation Laws Abolishment Act through the Commons against the efforts of the shipping interest; and Colonial Secretary (1855-8). Labouchere was created Baron Taunton in 1859.

Labouchere, HENRY DUPRÉ (1831), English journalist, M.P., and editor and proprietor of *Truth*, a society paper which he started in 1876. Educated at Eton, he entered the diplomatic service in 1854, but retired from it in 1864. He represented Middlesex (1867-8), and from 1880 to 1905, when he retired, was one of the members for Northampton. He was a member of the Jameson Raid Commission (1896). As 'A Besieged Resident' he contributed a series of extremely interesting letters to the *Daily News* during the investment of Paris in the Franco-German war. Subsequently he became city editor of the *World*, under Edmund Yates's management. His own journal, *Truth*, has been very successful in the exposure of a number of social, financial, and administrative scandals.

Laboulaye, EDOUARD RENÉ LEFEBVRE DE (1811-83), French jurist and author; born in Paris, and after a successful legal career became professor of comparative jurisprudence in the Collège de France (1849). Besides numerous works on French law, and several stories (*Contes Bleus*, *Pablo*, and

others), he published the paradoxically-named *Histoire Politique des Etats-Unis, 1620-1789* (1855-66). Laboulaye edited the *Revue Historique de Droit* (1855-69), *Revue de Législation* (1870-6), and *Nouvelle Revue Historique* (1877-83). See Wallon's *Notice sur la Vie de M. Ed. Laboulaye* (1889), and the *Nouvelle Revue Historique* for 1883.

Labour is a term given in obstetrics to the train of events that ends in the expulsion of the child. It may be classified as follows:—*Abortion*, when it occurs before the formation of the placenta—i.e. before the commencement of the fourth lunar month. *Miscarriage*, when it occurs after the formation of the placentas, and before the child is viable—i.e. from the fourth to the end of the seventh lunar month. *Premature birth*, if it occur after the child has become viable, but before full time—i.e. before the end of the tenth lunar month. *Full time birth*, when it occurs at full term. *Delayed labour*, when it occurs more than forty-one weeks after conception.

A labour is termed normal when the foetus presents by its vertex, the uterine contractions following one another in such a manner that everything is over without artificial aid in twenty-four hours. This train of events happens in about 90 per cent. of labour. This process is divided into three stages—a stage of dilatation, a stage of expulsion or birth of the child, and the after-birth or the placental stage.

The first stage of labour or stage of dilatation commences with the onset of the uterine contractions, and ends with the full dilatation and the rupture of the fetal membranes. Its average duration is in primiparas from ten to twelve hours, and in multiparas from six to eight hours. The second stage, or stage

of expulsion, commences with the full dilatation of the canal and rupture of the membranes, and ends with the expulsion of the child. Its average duration is from one to two hours in primiparas, and from ten to fifteen minutes in multiparas. The third stage commences with the birth of the foetus, and ends with the expulsion of the after-birth. Its duration depends on the manner in which the stage is conducted. If the expulsion of the placenta is left to the natural efforts, the average duration is from two to three hours; if, as is usual, assistance is given, the duration is from ten to fifteen minutes.

In the general management of labour there are three essential indications: 1) To prevent any septic infection from being introduced from without; (2) to be on the outlook for any abnormal conditions which may threaten danger to the mother or child; and (3) to reduce suffering to a minimum by the administration of an anaesthetic. By far the most essential point in the successful management of a midwifery case is a thorough knowledge of the theory and practice of asepsia.

Labour. The term labour as used by economists has all the ambiguities to which in popular usage the word is subject. Much of the ambiguity is due to the fact that labour may mean different things in production and in consumption, and to the further important distinction between the labourer's and the employer's point of view. Not only as a factor in production, but also in distribution, labour plays a very important part, and it is here that the labour difficulties arise. The share which labour receives of the product is called 'wages.' The distinction between the employer's and the labourer's points of view is just as important in distribution as

in production, and the so-called conflicts of capital and labour generally arise from this. See **WAGES, SOCIALISM, ECONOMICS, and SLAVERY AND SLAVE TRADE.**

Labour Colonies. Under this term are usually included several distinct types of institution whose only common characteristic appears to be that they provide relief for normally able-bodied persons (with or without their families) in return for or on condition of the performance of a certain amount of work. The principal types are the following:

1. *The free 'tramp colonies' of Germany.*—The first of these was established at Wilhelmsdorf near Bielefeld in 1882. In 1908 there were 35 such colonies, with accommodation for 4,697 persons, maintained by a special voluntary association with considerable public subventions. Most of the colonies are in country districts, but they include a few town institutions (Berlin, Hamburg). Two main principles of their administration are (1) That all able-bodied men, other than dipsomaniacs, who are willing to work, are admitted without distinction of character so long as there is room; and (2) that dismissal is the only form of punishment. As a natural consequence of these two principles the colonies have become the regular resort of tramps, and of the lowest classes of casual labourers. It does not appear that the colonies have any reformative influence on their inmates, or that they perform any function substantially more useful than do the casual wards in the United Kingdom.

2. *Colonies for the compulsory detention of vagrants*, as found in Belgium, Holland, and Switzerland. The largest of these, at Merxplas in Belgium, has a population of over 5,000, and is substantially a prison to which able-bodied vagrants as well as certain

other classes (inebriates, persons convicted of immoral offences, etc.) are committed by a judicial authority for periods of not less than two or more than seven years. The colony has little or no reformative effect, and its value lies therefore wholly in its clearing the streets of beggars and segregating certain harmful elements from society. The Swiss detention colonies, of which there is one in nearly every canton, are much smaller, the largest (at Witzwyl) having not more than two hundred inmates. No doubt as a consequence of this they possess some reformative effect. Germany, in addition to the free colonies already described, possesses also a number of 'work-houses' (*Arbeitshaüser*) for the compulsory detention of vagrants.

3. *The free 'home colonies' of Holland*, intended for the reception and settling on the land not only of men, but of their families as well. These were started by a voluntary association in 1810. According to a Report of the Departmental Committee on Vagrancy 'the intention was to give temporary assistance, but it was found that persons entering the free colonies remained there, very few fresh cases were received, and the scheme does not appear to be very successful.'

In the United Kingdom the only institutions calling for special mention are the Salvation Army Colony at Hadleigh, and the colony maintained since 1905 by the Central (Unemployed) Body for London under the Unemployed Workmen Act, 1905, at Hollesley Bay. The former was planned originally as a training ground for emigration, but is little used for this purpose, and appears now to correspond most nearly in type to the German free colonies—except in so far as a certain proportion of the inmates, in place of coming on their own

direct application, are sent by Boards of Guardians or from the city institutions of the Salvation Army. There are no powers of detention, and only single men and men without their families are dealt with. The Hollesley Bay Colony is of quite a special type, being used to give temporary assistance, combined with training in agricultural pursuits, to selected men from London, the men receiving simply board and lodging at the colony, while allowances are paid to maintain their families at home. Provision has now been made also for the reception of a certain number of families at the colony itself with a view to their ultimate settlement on the land as small holders.

The Departmental Committee on Vagrancy (1904) reported in favour of the establishment of detention colonies to which habitual vagrants might be committed for periods of not less than six months or more than three years. Such colonies were to be established either by councils of counties or county boroughs or by philanthropic agencies, and to be certified by the Secretary of State, an Exchequer contribution being made towards the maintenance of persons sent to them. See *Agencies and Methods for dealing with the Unemployed in Foreign Countries* (Board of Trade Report, 1904); *Report of Departmental Committee on Vagrancy* (1906); *Annual Reports of Central (Unemployed) Body for London* (P. and S. King); and W. H. Dawson's *The Vagrancy Problem* (1908).

Labour Day, a legal holiday in New York, New Jersey, Pennsylvania, and other American states, held on the first Monday in September, and celebrated by labour processions and assemblies in the chief towns. Since the Labour Congress at Berlin (1890) the 1st of May has been dedicated

to labour demonstrations in several of the European countries.

Labourdonnais, BERTRAND FRANCOIS MAHÉ DE (1699-1755), French admiral, born at St. Malo; served gallantly in the French East India Company's navy, and successfully governed Bourbon and the Ile de France (1733-40). In 1740 he began the conflict with the British for the naval sovereignty of the Indies, and in September 1746 captured Madras, but was bribed with £40,000 to restore it to the English. Dupeix, the governor-general, refused to recognize this ransom, and secured the recall of Labourdonnais, who was accused of treachery and imprisoned in the Bastille (1748-52). See *Vie de Mahé de Labourdonnais*, by his grandson (1827); and *Labourdonnais Mémoires* (1750).

Labourers, STATUTES OF. The Black Death of 1348 caused such an increase in the price of labour that the acts called Statutes of Labourers were passed in 1349 and 1351, and extended to London and the Cinque Ports in 1351. They required every labourer to serve any employer who called on him to do so, at the rate of wages prevailing two years before the plague. The statutes were repealed in 1863.

Labour Exchanges. In the widest sense of the term a 'labour exchange' means any office or place used for the purpose of bringing into communication those who want to buy labour (employers requiring workpeople) and those who want to sell labour (workpeople seeking employment). In practice, however, the term is most commonly applied to the public offices set up by national or municipal authorities for the general use of all would-be employers and employees. The growing need for such offices has been increasingly recognized in the principal European coun-

tries. In a Board of Trade Report on *Agencies and Methods for Dealing with the Unemployed in Foreign Countries* (1904), special attention is called to 'the very considerable extension of these institutions in the last few years in Germany, Austria, France, Switzerland, and Belgium.' There may now be added to this list Sweden, Denmark, and Norway (where a law was passed in 1906 for the establishment of free public labour registries in such towns and communes as may be determined by royal decree). The greatest development of these institutions has been in Germany, where in 1908 there were 389 offices affiliated to the Federation of German Public Labour Exchanges, filling between them 932,966 situations in the year. The most important are in Berlin, Munich, Stuttgart, Dresden, Leipzig, Frankfurt, Cologne, and Strassburg. These exchanges are all either municipal institutions or maintained by voluntary associations with municipal subsidies.

In the United Kingdom, labour exchanges were established in London and a few other towns by local authorities under the Unemployed Workmen Act, 1905. In 1909 the Royal Commission on the Poor Laws and the Relief of Distress recommended the establishment of a national system of labour exchanges as the first step for dealing with unemployment, and by the Labour Exchanges Act of the same year the Board of Trade were empowered to set up such a system. The system, when complete, will comprise some 350 exchanges of varying importance in all the larger towns of the United Kingdom (down to about 20,000 inhabitants), while provision will be made for extension to the smaller towns and country districts either through the post offices or by

means of travelling clerks, working from some large centre. The first exchanges under the Act were opened on February 1910, and at the end of June 1911, 217 were in operation, the total number of vacancies filled during the eleven opening months being 370,000. The United Kingdom is thus the first country to possess a national system of labour exchanges. The other main characteristics of the system are that it is (1) free—no fees being charged either to employers or to employees; (2) voluntary—dependent upon employers and employees using it of their own free will and on its business merits; (3) industrial—in the sense of having no connection with the poor law or the relief of distress, but being concerned solely with bringing capable workmen and employers together; (4) impartial—in the sense of taking no sides as between employer and workman in cases where the interests of the two come in contact (e.g., strikes). The immediate object of the labour exchange system is to enable every workman in every part of the country to hear without delay of any suitable work that may be available for him. The system will also, it is hoped, make possible a more satisfactory organization of casual labour; will assist the guidance of boys and girls in the choice of careers; and will form the basis of the scheme of compulsory insurance against unemployment embodied in Part II. of the National Insurance Bill of 1911.

See *Reports of the Royal Commission on the Poor Laws and Relief of Distress*, 1909 (Majority Report, Part VI., chap. iv.; Minority Report, Part II., chap. v.); W. H. Beveridge's *Unemployment: A Problem of Industry* (1908); *Labour Exchanges Act, 1909, General Regulations and*

Financial Statement issued in connection therewith (Parliamentary Papers).

Labouring Classes. These were defined by the Metropolitan Police Act, 1886, as including mechanics, artisans, labourers, and others working for wages, hawkers, costermongers, persons not working for wages but working at some trade or handicraft without employing others except members of their own family, and persons, other than domestic servants, whose income does not exceed an average of thirty shillings a week, and the families of any such persons who may be residing with them.

Labour Party. The first members to be returned to Parliament as direct representatives of labour were Messrs. Alexander Macdonald and Thomas Burt, at the General Election of 1874. The 'Labour Party,' however, in the present sense of the term, dates only from a special conference of Trade Union, Co-operative, and Socialist organizations held in February 1900. From that conference sprang the 'Labour Representation Committee,' which, by a change of name on the eve of the General Election of 1906, became the 'Labour Party.' The new organization combines two elements—trade unionists who need not necessarily be socialists, and socialists who need not necessarily be trade unionists; its management being in the hands of an executive committee of thirteen, nine elected by trade unions, one by trades councils and local representation committees, and three by socialist societies. Its objects are 'to organize and maintain a Parliamentary Labour Party; with its own whips and policy, and for that purpose to secure the election of candidates for whose candidature an affiliated society

has made itself financially responsible, and who have been selected by a regularly convened conference in the constituency.' All such candidates are required to sign the 'constitution' of the party. At the General Election of 1900 fifteen candidates were put forward by the new organization, but only two were successful. In 1901, however, a fresh impetus was given to the movement by the decision of the House of Lords in the Taff Vale case, making trade unions liable for the wrongful actions of their officers. In 1906 50 candidates were put forward and 29 were elected. The subsequent adhesion of most of the miners' representatives, who had hitherto held aloof, raised the number to 57, but the General Election of 1910 reduced it to 40. See Conrad Noel's *The Labour Party: what it is and what it wants* (1906).

Labrador, an extensive peninsula on the E. of British N. America, lying between Hudson Bay and the Gulf of St. Lawrence. Its length is 1,100 m., breadth 470 m., and area 530,000 sq. m. It is shared between Canada and Newfoundland. The interior is very imperfectly explored, but it is believed to be sterile. It consists of a high plateau, rising in places to 2,000 ft. The climate, even on the coast, is much too severe to ripen ordinary cereals, although it lies in the same latitudes as the N. parts of the United Kingdom. Its shores are washed by an icy Arctic current, which is responsible for its low mean annual temperature of 24° F. The Atlantic coast is bold and rugged, and there are a number of fine harbours and deep inlets, the most important of which are Hamilton Inlet, into which flows Hamilton R., and Ungava Bay. The interior is uninhabited, but along the E. coasts

there is a fringe of settlements. The Hudson's Bay Company maintains a few scattered factories, and the Moravian missionaries to the Eskimos have supported a number of stations since 1770. The extent of the Indian population is unknown; they are of the Algonquin tribe. The permanent coast population, which is largely half-breed, is about 14,000, but there is a migratory summer population of 30,000 engaged in the shore fisheries, which are remarkably productive. Labrador was probably first discovered by the Norsemen about 1000. Until recently it was generally supposed that John Cabot came to its shores in 1497, but it is now considered more probable that he reached the coast of America further to the s. About 1500, Cortereal landed on the coast of Labrador and gave the region its name ('the land of labourers'), thinking that it would afford a supply of slaves. It was early frequented by Basque fishermen, and later by Bretons, who founded (1520) a town called Brest in Bradore Bay, the ruins of which may still be seen. The peninsula was transferred by the treaty of Paris (1763) to Great Britain, and the s. and e. shores were handed over to Newfoundland. Part of the peninsula belongs to the province of Quebec, the boundary on the e. being at Blanc Sablon, near the Strait of Belle Isle; most of the remaining area, draining into Hudson Bay, now forms the territory of Ungava, and a narrow strip on the e. coast, with an area of 119,000 sq. m. and a population of 4,000, is now officially known as Labrador. See Grenfell's *Vikings of To-Day* (1895) and *Labrador: The Country and the People* (1910), Wallace's *The Long Labrador Trail* (1907), and W. G. Gosling's *Labrador* (1910).

Labradorite, one of the commonest of the soda-lime felspars or plagioclases, found in many crystalline rocks, such as basalt, gabbro, andesite, and diorite. It is usually colourless or gray, brown or green; sp. gr. 2.7, h. = 5 to 6. It is sometimes found in well-formed crystals embedded in the matrix of the rock; and at other times in large masses, in which the crystals are imperfect, though the leavage is more or less distinct. Such masses have long been known from Labrador, and specimens from that locality have often a beautiful iridescent lustre. They may also show distinct, straight, parallel bands, which are produced by twinnings. (See MACLES.) Labrador spar is used as a semi-precious stone. See Streeter's *Precious Stones and Gems*.

Labridæ, a family of fishes belonging to the order Teleosteii. See WRASSES.

La Bruyère, JEAN DE (1645-96), French writer, born at Paris, took his licence in law at Orléans in 1665, and was called to the Paris bar. In 1673 he purchased the office of treasurer of finances for Caen, but still continued to reside in Paris. In 1684, on the recommendation of Bossuet, he became tutor to the Duc de Bourbon, grandson of the great Condé, and he continued to reside in the household of Condé till his death. A man of retiring and studious disposition, he has recorded his observations in *Les Caractères de Théophraste, traduits du Grec, avec les Caractères ou les Mœurs de ce Siècle* (1688). As a writer of *pensées* and maxims he is inferior to Pascal and La Rochefoucauld. But he is a master of French prose. His *Dialogues sur le Quétisme*, published posthumously in 1699, adds nothing to his fame. See editions of his works by Walckenaer (1845), Servois (1865, etc.).

and Asselineau (1871); also Fourrier's *La Comédie de la Bruyère* (1886); Sainte-Beuve's *Portraits Littéraires*, and *Nouveaux Lundi's*; Pellisson's *La Bruyère* (1892); and Morillot's *La Bruyère* (1904).

Labuan, isl., 6 m. off the N.W. coast of Borneo; area, 30 sq. m. It is flat, well wooded and watered, and has extensive coal measures. Sago is the principal product. The annual rainfall is excessive, reaching almost 170 inches. The total trade reaches a value of about £400,000 annually. Victoria (pop. 1,500), on the S.E. coast, affords an excellent anchorage. The island was ceded by the sultan of Borneo to Great Britain in 1846; it was administered by the British N. Borneo Company from 1890 to 1906; when it was annexed to the Straits Settlements. Pop. 9,000, mostly Malays.

Laburnum is a genus of hardy leguminous trees, natives of S. Europe and Asia Minor. They are of great beauty, and are among the most popular of our garden flowering trees. They bear drooping racemes of yellow, papilionaceous flowers, the calyxes having each two short, obtuse lips; the fruit is a long pod. The best known species is the common laburnum, *L. vulgare*, which flowers in April and May.

Labyrinth (Gr. *λαβύρινθος*) was the term applied to a building containing many winding passages, arranged in such a way that an exit was difficult to find. We are told by Herodotus that the earliest known labyrinth was in the Fayum in Egypt, and that the more famous Cretan one was a copy of it. The former was built by Amenemhat III. of the 12th Dynasty; its ruins were discovered by Flinders Petrie. The latter is said to have been constructed for King Minos by Dædalus to secure the Minotaur. The

labyrinth on the island of Samos and the Italian (the gigantic tomb of Porsena near Clusium in Italy) were also famous in antiquity. See Flinders Petrie's *Hawara, Biahmu, and Arsinoe* (1889); Kingsley's *Heroes* (for the labyrinth in legend); and the *Journal of Hellenic Studies* (1900, 1901); also **CRETE**.

Labyrinth. See **HEARING, DEFECTS OF**.

Labyrinthodonts. This name was originally given by Professor Owen to certain extinct fossil amphibians on account of the structure shown by a cross section of their teeth. The labyrinthodonts are now regarded as a sub-order of the Stegocephala, and include large amphibia which in general habit resembled a newt or salamander. In some cases their skulls were nearly two feet in length, and covered by large sculptured bony plates. Their limbs were comparatively small, and are not well known. On the under surface of the body they were provided with a breastplate of bony scales. Remains of large labyrinthodonts are found in the Carboniferous, Permian, and Triassic strata. Among the best known genera are *Archegosaurus*, *Loxomma*, and *Mastodonsaurus*.

Lac. See **LAKH**, and **SHELLAC**.

Lacaille, NICOLAS LOUIS (1713-62), French astronomer, born at Rumigny; he was the first to determine accurately the length of an arc of the meridian. He became mathematical professor at the Collège Mazarin (1740), and a member of the Académie des Sciences (1741). While on a visit to S. Africa he made astronomical observations, and determined the position of upwards of 10,000 stars, resulting in his *Cælum Australē Stelliferum*, posthumously published by Maraldi (1763). He also wrote *Observations sur 516 Etoiles du Zodiaque* (1762-3).

Lacaita. SIR JAMES PHILIP (1813-95), Italian scholar and politician, who, as a Neapolitan advocate, aided Gladstone in his exposure of Bourbon misrule. He came to London (1852), and was appointed professor of Italian at Queen's College. After the fall of the Bourbons Lacaita returned to Italy, and entered the Italian Parliament as deputy for Naples.

La Calprenède. GAUTIER DE COSTES, SEIGNEUR DE (1610-63), French novelist and playwright; went to Paris in 1632 and became an officer in the guards, and a royal chamberlain; won a high contemporary reputation by his novels, *Cassandra* (10 vols. 1642-50), *Cleopatre* (12 vols. 1647-58), *Faramond* (7 vols. 1661-71), and *Les Nouvelles, ou les Divertissements de la Princesse Alcidiane* (1661). The classic names were merely grafted on to descriptions of his own time.

Lacandon. tribe of Maya-Quiché stock, inhabiting the region around Lacandon and Usumacinta Rivers of Chiapas (Mexico) and Guatemala, about the borderland between Yucatan and Guatemala; but they are now chiefly confined to the wooded district between Lake Peten and the Rio de la Pasión tributary of the Usumacinta. Their language is a dialect of the Maya of Yucatan. See Brinton's *The American Race* (1901).

La Caniza, tn., Spain, in Pontevedra, 14 m. E. of Vigo. Pop. 8,000.

La Carlota. (1.) Tn., Spain, prov. of and 16 m. s.s.w. of Cordova; manufactures linen fabrics. Pop. 6,000. (2.) Or SIMANCAS, pueb., Negros Occidental prov., Philippines, 18 m. s. of Bacolod. Pop. 14,000.

La Carolina, tn., Spain, prov. of and 35 m. N. by E. of Jaen. Pop. 10,000.

Laccadive Islands, a group of coral islands in the Indian Ocean, only nine of which are inhabited. They belong to Great Britain, and lie about 200 m. west of the Malabar coast. Their surface is flat, low, and barren. Cocoanut is the chief plant, and coir (cocoanut fibre) is extensively manufactured. The group was discovered by Vasco da Gama in 1499. Area is estimated at 80 sq. m., of which 60 are banks and reefs. Pop. 10,000.

Laccolith, or LACCOLITE, a lens-shaped intrusion of igneous rock which arches up the strata above it. The term was first introduced by Gilbert, 'The Geology of the Henry Mountains,' U.S.G.S. (1877).

Lace is a textile fabric of which both ground and pattern are entirely produced by the lacemaker either by the needle, in which case it is called 'needle point,' or on the pillow by means of a number of bobbins, each containing a supply of thread, and each at liberty to be manipulated independently. When produced by the latter method it is called 'pillow lace.' Both kinds are produced on a parchment pattern, but each has its own distinctive features.

Certain pillow-made laces claim the prefix 'point'—thus 'Point de Malines,' 'Point de Valenciennes.' Point also means a particular stitch, as 'Point de Paris,' or 'Point de Neige.' Most of the best-known laces derive their names from the place of origin, or district most renowned for their production, as Brussels or Brabant.

Lace, or more correctly lacenet, making by machinery dates from 1768, when a loop net was produced in saleable quantity by a development of the stocking-machine.

The warp machine (1775) was so much improved by the year

1810 that it was making nets and fabrics which are still in demand. The principle of the machine is that of crochet fabric, as made by hand with the crochet-hook. Though the warp machine was so useful, there was still required a machine to make a twist net—that is, to manipulate the threads by mechanical means so that they should twist round one another. The twist-lace machine not only makes the threads twist round one another, but, by dividing them into two thread systems, also makes them traverse. One-half the threads are placed upon a cylindrical beam called a warp beam, and the other half are wound separately upon bobbins, which are really two thin discs of brass riveted together about midway between the centre and the periphery, the thin space from the rivets upward holding the cotton or other material. (See Fig.) This bobbin is dependent for its efficiency in working upon the receptacle that contains it, which is called a carriage, and may be described as a roughly triangular piece of thin iron or steel accurately segmental at the base, with an irregular opening stamped out of it, and comparatively central to the area of the metal.

The principle involved in all twist-lace machinery is perhaps best illustrated by a swinging pendulum, each individual carriage or shuttle containing the bobbin thread being passed through the warp threads with exactly the movement of a pendulum.

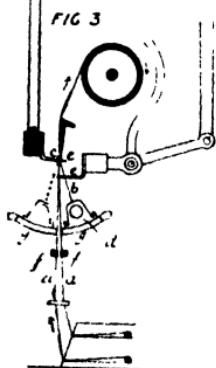
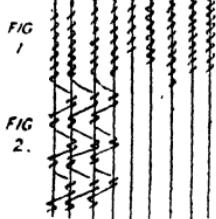
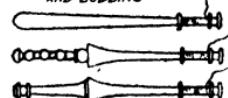
The motion is attained by constructing the machine to a circle of a given diameter, generally from 12 to 13 inches, the centre of such circle being the point where the fabric is formed, the carriages being moved or swung in the lower portion of the circumference of the circle, and the bot-

toms of the carriages being a true segment of this circle. The grooves or 'combs' by which the segmental base of the carriages are at the same time supported and kept at the same fractional distance apart, have their continuity broken midway between their extremities, thus forming an opening sufficiently wide to enable the warp threads to work in a well-defined movement at right angles to the plane of the carriages; and if such movement is so limited as to embrace only the fractional distance determined by the thickness of one carriage, or one 'gait,' as it is technically called, and this movement be continued—to the right as the carriages pass in one direction, and to the left as they pass in the other—a series of twisted pillars, each composed of a bobbin thread and a warp thread, would be produced, and each pair of threads would be entirely distinct and apart from its neighbouring pair (Fig. 1), nothing in the nature of a fabric being produced. But should the guide bar or bars that control these warp threads have their movement so arranged that at certain regular intervals it extends over the space of two carriages, a connection will be formed between all the neighbouring pillars of the warp (Fig. 2), and a net will be produced called Mechlin, or Malines.

The machinery used in the various departments of the lace trade varies mechanically according to the particular purpose for which it may be required, but the fundamental principle remains the same. The carriages, it will be seen, vary accordingly. Some may be acted upon from above, as in the case of the Lever's carriage, or from below (Fig. 5). In Fig. 3 is shown the most important parts of the mechanism of a Lever's machine, *a* being the



PILLOW
AND BOBBINS



BOBBIN CARRIAGES FOR PLAIN NET MACHINES

ACTUATED BELOW

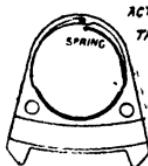
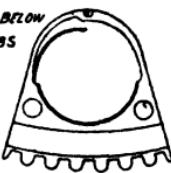
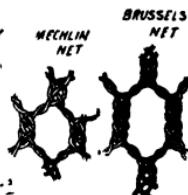
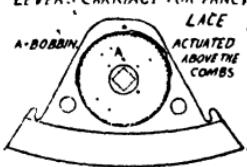


FIG 5



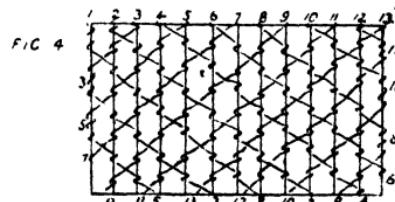
LEVERS CARRIAGE FOR FANCY LACE

A-BOBBIN
ACTUATED ABOVE THE COMBS



BRUSSELS NET

BOBBIN AND CARRIAGE IN COMB



Lace Manufacture.

FIG. 3. Diagrammatic transverse section of Lever's machine.—The warp threads $a\ a$ receive a slight lateral movement from rods $f\ f$, which enables the bobbin carriages $d\ d$ to pass on either side of them; the combs $g\ g$ having a similar movement in opposite directions, the bobbin carriages are transferred, when required by the design, one step or more down the opposite comb. The points $e\ e$ take up the twist to the central point c ; b is the bobbin thread.

bobbin and warp thread, with the points *e* just taking up the twist to the centre of the circle at *c*. The dotted lines merely show the extreme movement of carriage on either side of the warp threads *a*. The traverse bobbin net machine was invented by John Heathcote in 1809-11, and the Lever's machine by John Lever in 1813. See Felkin's *History of the Machine-wrought Hosiery and Lace Manufactures* (1867); Beebe's *Lace, Ancient and Modern* (1881); Lefébure's *Embroidery and Lace* (Eng. trans. by Cole, 1888); Palliser's *History of Lace* (new ed. 1902); Caulfield and Saward's *Dictionary of Needlework* (1882); F. N. Jackson and E. Jesurum's *History of Handmade Lace* (1903); and N. H. Moore's *The Lace Book* (1905).

Lace-bark is the popular name given to two species of W. Indian trees, which constitute the genus *Lagetta*, a subdivision of the order Thymelæaceæ. One of these species, *L. lintearia*, is grown in this country as a stove plant. It is evergreen, grows to five feet in height, and it bears white flowers of some beauty; but its chief interest is the inner bark, which, when macerated and stretched laterally, resembles coarse lace.

Lace Corals, a name given to some species of Polyzoa. See POLYZOA.

Lacedæmon. See SPARTA.

Lacedonia, tn., Italy, prov. of and 35 m. E.N.E. of Avellino. Pop. 6,300.

Lacépède, BERNARD GERMAIN ETIENNE DE LAVILLE, COMTE DE (1756-1825), French naturalist, born at Agen, was curator of natural history in the Jardin du Roi at Paris, and, later, professor of natural history in the Jardin des Plantes and at the University of Paris. He continued Buffon's *Histoire Naturelle* in his *Histoire des Quad-*

rupèdes ovipares et des Serpents (1788-9) and *Histoire des Reptiles* (1789-90), and also wrote on fishes, cetaceans, and the natural history of man, as well as a *Histoire Générale de l'Europe* (18 vols. published posthumously, 1826), and *La Poétique de la Musique* (1785). A collected edition of his works on natural history was published by Desmarest (1826-33).

Lacerta, a small constellation formed by Hevelius, between Cygnus and Andromeda. 2 Lacerte is a spectroscopic binary; period, 2'6 days.

Lacertidae, a family of lizards of which the type genus is *Lacerta*. See LIZARDS.

Lace-wing Flies are members of the order Neuroptera, remarkable for their delicate wings and brilliant eyes. Stephens enumerates four genera as having British representatives, one of these being the golden-eyed fly.

Lachaise, FRANÇOIS D'AIX DE (1624-1709), French Jesuit, born at Château d'Aix, in the department Loire. He was French provincial of his order when, on the death of Ferrier, he was chosen by Louis XIV. as his confessor (1674), a post he held till his death. Lachaise founded the College of Clermont. His garden was, in 1804, converted into a cemetery, which is known as Père Lachaise. See Auray's *Cimetière de Père Lachaise*, and Chante-lauze's *Le Père de Lachaise* (1859).

La Chaussee, PIERRE CLAUDE NIVELLE DE (1692-1754), French dramatist and friend of Voltaire, is often cited as the originator of the 'comédie larmoyante,' from which the modern French drama took its origin. He was over forty before his first play, *La Fausse Antipathie* (1734), was produced. This was followed two years later by *Le Préjugé à la Mode*, a success which was the means of his election to the

French Academy in 1736. Of his other plays the chief are *L'Ecole des Amis* (1737), *Mélanide* (1741), *Amour pour Amour* (1742), *L'Ecole des Mères* (1745), *La Gouvernante* (1747), and *L'Ecole de la Jeunesse* (1748). He was also the author of a number of *Contes* in verse. His *Oeuvres Complètes* were published in 1762 in five volumes. See Uthoff's *P. de la Chaussée Leben und Werke* (1885), and Lanson's *Nivelle de La Chaussée et la Comédie Larmoyante* (new ed. 1903).

Lachenalias, or CAPE COW-SLIPS (named after Wernerus de la Chenal of Switzerland, an eminent botanist), are S. African bulbous plants belonging to the order Liliaceæ. They produce two thickish radical leaves and tubular flowers, generally pendulous from erect flower-stems. The only two species commonly cultivated are *L. tricolor*, with purple, green, and yellow flowers, and *L. pendula*, the largest of all lachenalias.

Laches. In England it is a principle of equity that it will only help the vigilant, and not those who sleep on their rights. Thus, where there has been a needless delay, or 'laches,' in prosecuting an equitable claim, equity takes away the remedy: e.g. equity will not restrain a man from completing a house at the suit of a plaintiff who has taken no action till it was half finished. See also ACQUIESCENCE; LIMITATION, STATUTES OF.

Lachesis. See MOIRE.

Lachine, tn., Jacques Cartier co., Montreal Island, Quebec, Canada, 8 m. s.w. of Montreal, on Lake St. Louis, and at the head of Lachine Rapids, which are usually navigated by steamers on the downward trip. The rapids supply electric power for Montreal. Pop. 5,600. **LACHINE CANAL**, which was constructed to avoid the rapids, connects the town

with Montreal, and is the main highway of commerce. The name La Chine was given in derision of certain early explorers, who, setting out for China by way of the St. Lawrence, got no further than the site of the town.

Lachish (Josh. 10:3, etc.), a Philistine city, noticed on monuments about 1500 B.C., as taken by the Abiri. The site is a large mound at Tell el-Hesy, near the hills, 16 m. E. of Gaza. Eight cities were excavated one above the other, and remains of early date were discovered, including seals of the Pharaohs about 1500 B.C., flint instruments, pottery, etc., with a clay tablet of cuneiform writing. An Assyrian bas-relief represents Sennacherib on his throne before Lachish in 702 B.C. (2 Kings 19:8). The town was still inhabited after the captivity (Neh. 11:30), but is now deserted. See Petrie's *Tell el-Hesy* (1891); Bliss's *A Mound of Many Cities* (1894).

Lachlan, or CALARE, riv., New South Wales, rises in the Blue Mts., 120 m. s.w. of Sydney, and flows N.W., W., and s.w. to join the Murrumbidgee 40 m. from its confluence with the Murray. About 700 m. long, it is navigable only in rainy seasons.

Lachmann, KARL KONRAD FRIEDRICH WILHELM (1793-1861), German critic and philologist, born at Brunswick; lectured at Berlin (1816), and became (1818) professor at Königsberg University, and at Berlin University (1827). He published critical essays on Homer (ed. 1874) and the 'Nibelungenlied,' and edited the works of Catullus, Tibullus, Terence, Propertius, Babrius, and Lucretius. His small edition of the Greek Testament appeared in 1831, and the large edition, with the Vulgate, in 1846 and 1850. He edited the principal old German poets—Walther von der Vogelweide (1827), Hartmann

von der Aue's *Iwein* (1827), and *Wolfram von Eschenbach* (1833)—and wrote numerous essays on kindred subjects. *Lucretius* (1850) was his last and perhaps his greatest work. See Hertz's *Karl Lachmann* (1851); Grimm's *Rede auf Lachmann* (in Grimm's *Kleine Schriften*, 1864); and Leo's *Rede zur Säkularfeier Karl Lachmanns* (1893).

Lachute, tn. in Argenteuil co., Quebec, Canada, on the North R., 44 m. w.n.w. of Montreal; has grist and paper mills, and exports dairy produce. Pop. 2,000.

Lacinium, promontory in S. Italy, in Bruttium, now Calabria, a few miles s. of the site of the ancient city of Crotona. On it stood a famous temple of Hera Lacinia, the ruins of which have given to the promontory its modern name of Capo delle Colonne.

Lac Insects. See COCCUS INSECTS.

Lackawanna, riv. of Pennsylvania, U.S.A., rises in Susquehanna co., in the N.E. corner of the state, and flows s. and s.w. to join the N. branch of the Susquehanna at Pittston. Its lower valley is rich in anthracite coal.

Lackawanna City, tn., Erie co., New York State, U.S.A. Pop. (1910) 14,549.

La Condamine, CHARLES MARIE DE (1701-74), French explorer, born in Paris; after a distinguished career in the French army, was sent to Peru with Bouguer and Godin (1735-44) to measure an arc of the meridian at the equator. During these years he explored a great part of the basin of the Amazonas, and introduced india-rubber to Europe. See his *Journal du Voyage fait par Ordre du Roi à l'Équateur* (1751-2).

Laconia, city of New Hampshire, U.S.A., the co. seat of Belknap co., situated near the centre of the state, 100 m. N.

of Boston, on the Boston and Maine Ry. It has car works and manufacture of hosiery and knitting machines. Pop. (1910) 10,183.

Laconia and **LACONICA**. See SPARTA.

Lacordaire, JEAN BAPTISTE HENRI DOMINIQUE (1802-61), the greatest of French pulpit orators, was born in the department of the Côte d'Or. His father having died early, he was brought up by his mother, who was a very devout Catholic. He soon, however, repudiated her religious ideas, and distinguished himself both at Dijon, where he studied law, and at Paris, where he practised it, as a vehement enemy of the church. Suddenly all this changed; and in 1824 he entered Saint Sulpice, and by 1827 was a priest. Soon after this he made the acquaintance of Lamennais, and became his ardent disciple. In 1830 he joined Lamennais and Montalembert in founding the short-lived journal called *L'Avenir*. In 1840 he became a Dominican in the Minerva at Rome, assuming the name of Dominique. Thence he returned to France, and for years preached in the Dominican habit at Notre-Dame and in many other French churches, attaining an immense reputation as a pulpit orator, with the result that the Dominicans of France were formed into a regular order, with Lacordaire at their head. His school at Sorrèze, in the department of the Tarn, was described by Matthew Arnold in an interesting little book, *A French Eton* (1892). In 1860 he was elected a member of the Academy in the room of De Tocqueville, and was received there by Guizot. This was his last triumph. His health rapidly failed, and he died in November 1861. His life has been several times written—most brilliantly, perhaps, by his friend Montalembert.

bert (1862; Eng. trans. 1863). Other *Lives*, in French, are those by Foisset (1870), De Broglie (1888), and D'Haussonville (1895); and, in English, by Dora Greenwell (1867) and H. L. S. Lear (1882). Sainte-Beuve has a brilliant article on Lacordaire in *Les Causeries du Lundi*, i. 208.

Lacquers are of two kinds. (1.) The true Chinese lacquer, prepared from juices of certain trees, which, after purification and admixture with pigments and other substances, forms an almost imperishable varnish. (2.) A transparent varnish used to coat polished metal to improve its colour or prevent its tarnishing. These lacquers are alcoholic solutions of shellac coloured with turmeric, dragon's-blood, gumsandarac, or aniline dye.

Lacretelle, JEAN CHARLES DOMINIQUE DE (1766 - 1855), French historian, born at Metz. His *Histoire de France pendant le Dix-huitième Siècle* appeared in 1808. Elected to the Academy (1811), he became its president in 1816. Lacretelle's other important works were *Histoire de la Révolution Française* (1821-6); *Histoire de France depuis la Restauration* (1829-35); *Histoire du Consulat et de l'Empire* (1845-8); *Dix Années d'Épreuves pendant la Révolution* (1842); and *Testament philosophique et littéraire* (1840). He died at Mâcon.

Lacretelle, PIERRE LOUIS DE (1751 - 1824), brother of the preceding, was a distinguished French jurist, and author of *Mélanges de Jurisprudence* (1779). He became a member of the Legislative Assembly (1791), maintained the rights of the house of Savoy under the empire, and, with Jouy, Constant, and others, founded the *Minerve Française* (1818). He also wrote *Œuvres diverses* (1802-7); *Fragments politiques et littéraires* (1817); and *Portraits et Tableaux* (1817).

Lacroix, PAUL (1806 - 84), French antiquary, bibliographer, and writer, born at Paris. Under the name of 'P. L. Jacob, Bibliophile,' he published over eighty romances, besides plays, commentaries, histories, and bibliographies. He is best known for his curious compilations on French social life from medieval to modern times, including *Histoire du XVI^e Siècle en France* (1834-5); *Histoire de la Ville de Soissons* (1837-8); *Le Moyen Age de la Renaissance* (1847-52); *Histoire politique, anecdotique, et populaire de Napoléon III* (1853). Lacroix was custodian of the Bibliothèque de l'Arsenal, Paris, from 1855 until his death.

Lacroix, SYLVESTRE FRANÇOIS (1765 - 1843), French mathematician, born in Paris, and occupied the mathematical chair at the Collège de France (1815-43). He introduced the simple notation now employed in the integral calculus. Among his works are *Traité du Calcul Différentiel et du Calcul Intégral* (1797-1800); *Traité des Différences et des Séries* (1800); *Traité Élémentaire du Calcul des Probabilités* (1816); and *Cours des Mathématiques* (1796-1816).

Lacroma, islet in Dalmatia, Austria, 1 m. s. of Ragusa. Richard Cœur-de-Lion, on his return from the crusades in 1192, landed here.

La Crosse, city of Wisconsin, U.S.A., the co. seat of La Crosse co., situated in the w. part of the state, on the Mississippi R., about 130 m. s.e. of St. Paul. In the vicinity are extensive forests. It manufactures lumber, and has large flour mills, breweries, tanneries, foundries, and machine shops. Pop. (1910) 30,417.

Lacrosse. Although played in the United Kingdom, in Australia, and the United States, it is in Canada only that lacrosse has outdistanced all other games. The field of play is similar to that of football, and the object is the

same—i.e. to drive a ball between goal posts. The instrument used for this purpose is a 'crosse.' It is a strong stick like that used in hookey, but from the curved end there is stretched a net to a point near the handle. In this net the ball may be caught and carried, and from it the ball may be thrown to a distance of 150 yards. The ball authorized by the English Lacrosse Union is of india-rubber 'sponge,' not less than 8 nor more than 8½ inches in circumference, and not less than 4½ ounces in weight. The goal posts consist of two upright poles 6 feet apart and 6 feet in height. The goals are placed not less than 100 and not more than 150 yards from each other, and, as in association football, a net is attached to the goal posts. A full team consists of twelve players, who are designated as follows: Goal-keeper (who defends the goal); point (first man from the goal); cover-point (in front of point); third man, right defence, left defence (ranging down the field almost to the centre); centre (who faces—i.e. begins the game with his opposing centre in the middle of the field); third, second, and first home field (ranging along the field towards the opponents' goal); and the two remaining players who are nearest the opposite goal are called right attack and left attack. The opposing players are thus paired off, so that, no matter what part of the field the ball reaches, there are two rival players eager to secure it. There are two umpires, one at each goal. The ball is laid upon the ground between the crosses of the two opposing centres, and when both sides are ready the referee calls 'play,' and the struggle begins for the possession of the ball. A player is not allowed to handle the ball, the only exception to this being in the case of a goal-keeper while standing within the confines

of the goal crease—i.e. an oblong space, 15 by 17 ft., laid out as follows: 9 ft. behind and 6 ft. on either side of the goal post. The goal-keeper, if in this crease, may put away with his hand or block the ball in any way with his crosse or body. The match is won by the club which forces the ball the greater number of times through the goals from the front side in an hour and a half. In the spring of 1902 the Toronto Lacrosse Club sent a team of fifteen players across the Atlantic to play the representative clubs of England and Ireland. The series of matches did a great deal to popularize the game in the United Kingdom. The committee of the M.C.C. some time ago adopted lacrosse as its winter pastime, with headquarters at Lord's. See 'National Amateur Lacrosse Union's Constitution and By-Laws,' A. J. Pittaway, president, Ottawa, Canada, and 'Laws of Lacrosse,' as revised by the English Lacrosse Union (1910).

Lacryma Christi, a famous Italian wine made from a special Muscat grape grown on the farms of the monastery Lacryma Christi ('Tear of Christ'), which is situated on the lower slopes of Mt. Vesuvius.

Lactantius, LUCIUS CÆLIUS FIRMIANUS (or L. CECILIUS LACTANTIUS FIRMIANUS), a Christian apologist of the 4th century; was a pupil of Arnobius, and at first a rhetorician in Nicomedia. Having become a Christian, he wrote several theological treatises, and afterwards (313 A.D.) became tutor to Crispus, son of the Emperor Constantine. He died c. 330. His chief works are *Divinarum Institutionum Libri VII.*, an apologetic and polemical introduction to Christianity; treatises on the 'handiwork' and the 'wrath' of God (*De Opificio Dei*, *De Ira Dei*); and a historical work, *De Mortibus Persecutorum*, in which he seeks

to trace the judgments of God in the events of his time. See his works in *Ante-Nicene Christian Library*; Dissertations in Migne's *Patrologia Latina*, vi., vii.; J. H. B. Mountain's *Summary of the Writings of Lactantius* (1839).

Lactation. See BREAST.

Lacteals, the lymphatic vessels which convey chyle collected from the mucous membrane of the small intestine to the thoracic duct. They derive their name from the milky appearance of their contents after a full meal.

Lactic Acid, α -hydroxypropanoic acid ($\text{CH}_3\text{CHOH COOH}$), is a mixture of two stereo-isomeric monobasic acids that differ principally in their action on polarized light, and can be separated by the crystallization of their cinchonine salts, the action of moulds, or the crystallization of their zinc ammonium salts. It is produced by the action of the lactic bacillus in the fermentation of sugars and similar bodies, and is thus formed on the souring of milk. It also occurs in gastric juice and in the residue left on distilling fermented liquors. Cane sugar is the usual source, and is fermented in a slightly warm solution in the presence of sour milk, decaying cheese, and chalk, the latter substance being added to neutralize the free acid, which otherwise would soon stop the action of the organism. Lactic acid is set free by the action of sulphuric acid on the calcium lactate obtained, and forms a thick, very sour syrup (sp. gr. 1.2) that mixes with water, alcohol, and ether, and forms crystalline salts. Lactic acid, particularly its antimony salt, is used in dyeing and in calico-printing.

Lactic Acid Therapy. In recent years a valuable method of treatment by means of soured milk and other methods of administering selected lactic germs has been advocated by the distin-

guished French bacteriologist, Elie Metchnikoff of the Pasteur Institute, Paris. It is well known that lactic acid is a powerful anti-putrefactive agent. When milk turns sour—that is to say, when the milk sugar has undergone lactic fermentation with the formation of lactic acid—it can then resist putrefaction for a long time. This preservative action is due to the lactic acid, and the knowledge of this preservative property induced Metchnikoff to employ cultures of the lactic germ in order to produce nascent lactic acid just where its action is required. The product arrived at is known as lacto bacilline, and is administered in the form of a powder or tablet containing a special strain of the lactic bacillus. It may also be given as soured milk. The lactic bacilli go on multiplying in the intestine; and as the sugar in the food amply supplies them with the nourishment for their maintenance, they set free lactic acid, which permeates the intestinal contents and inhibits putrefaction and all irregular fermentation. Having been boiled and cooled, the milk is inoculated with a sufficient quantity of a pure culture of lactic germs (lacto bacilline) supplied in tablet form. The duration of the fermentation depends upon the temperature employed, and when complete yields a curdled milk which is agreeable to the palate and promptly arrests intestinal putrefaction. In some cases it may be desirable to make the curdled milk from skim milk, as a large amount of fat in the food may not be desirable. In addition to the lacto bacilline tablets there are many other commercial products now on the market, all claiming to be selected active lactic acid bacilli. These include sauerin, trilactine, lactigen, fermentactyl, and other preparations. Curdled milk prepared

by one of these methods is now largely used in the treatment of indigestion and other gastro-intestinal disorders, chronic rheumatism, neuritis, and other conditions arising from auto-intoxication, in many cases with the greatest benefit. A difficulty in the treatment must, however, be referred to. Bacteriological examination of the commercial preparations has revealed at times striking differences in their composition. None of them can be thoroughly relied on, but their effects should be watched, and in cases of doubt the efficacy of the preparation should be tested bacteriologically. In many cases good freshly prepared buttermilk is a more reliable preparation.

Lactometer (called also GALACTOMETER) is a simple form of variable immersion hydrometer, graduated to give a rough indication as to the richness and purity of milk. See HYDROMETER.

Lactose. See MILK SUGAR.

Lactuca is a genus of plants belonging to the order Composite. About sixty species are known. They are mostly natives of temperate regions, the most important species being *L. sativa*, the common lettuce. Two or three species are grown in gardens as ornamental plants, and are of easy culture in any deeply-dug loam. *L. tuberosa*, which produces loose panicles of pale-blue flowers in autumn, *L. alpina*, a much larger plant, bearing clusters of purple flowers in summer, and *L. macrorhiza*, are the favourites.

Lacy, PETER or PIERCE, COUNT (1678-1751), Russian soldier, was born at Killeedy, Co. Limerick. When only thirteen he served James II. at the defence of Limerick; left Ireland in 1692, and at Brest joined the Irish Brigade. After the peace of Ryswick he entered the Russian service; led a brigade at Pultowa; drove

Marshal Saxe from Courland; became a field-marshal, and defeated the Poles (1735) and the Turks (1736). Lacy also commanded the Russian sea forces against Sweden. He was the real reformer of the Russian army, as his younger son, Field-Marshal Maurice Lacy (1725-1801), was of the army of Austria. The elder Lacy, styled by Frederick the Great 'the Prince Eugène of Muscovy,' died governor of Livonia. See D'Alton's *Army Lists* and O'Callaghan's *History of the Irish Brigades* (1854).

Ladakh, the E. prov. of Kashmir, is bounded on the N. by the Karakoram Mts., and on the E. by Tibet. The province is traversed from E. to W. by a series of heights which link the Kunlun range with the Himalaya. The chief river is the Indus, which flows through a picturesque valley formed by two well-defined spurs of the Himalaya. Gold, copper, iron, salt, borax, and sulphur are found in the province. Ladakh is a wild, mountainous province, inhabited by a race distinctly Tibetan. Originally a part of Tibet, the province was afterwards independent until 1830, when it was annexed to Kashmir. Pop. about 30,000. Chief tn. Leh, in 33° 52' N. and 77° 33' E.

Ladas, the name of two famous ancient Greek athletes. One a native of Laconia (or of Argos, as his statue stood in Apollo's temple there), won the long race at Olympia. His date is unknown. There was a famous statue of him by Myron, and as Myron flourished about 430 B.C., Ladas must have lived about that time. The other was of Ægium in Achaea, and won the short race at Olympia in 280 B.C.

Ladd, GEORGE TRUMBULL (1842), American theologian and psychologist, born at Painesville, Ohio; was a Congregational minister at Milwaukee (1871-9); pro-

fessor of intellectual and moral philosophy at Bowdoin College, and lecturer on church polity and systematic theology at Andover (1879-81); and was elected to the chair of philosophy at Yale (1881). Among his works are *Principles of Church Polity* (1881), *Elements of Physiological Psychology* (1887), *Introduction to Philosophy* (1891), *Psychology, Descriptive and Explanatory* (1894), *Philosophy of Mind* (1895), *Philosophy of Knowledge* (1897), and *Philosophy of Conduct* (1902).

Lade, isl. off the w. coast of Caria in Asia Minor, opposite to Miletus. It is famous in history as the scene of the sea-battle by which the Persians put an end to the Ionian revolt in 494 B.C.

Lading. See BILL OF LADING.

Ladin Language. This tongue is spoken in the Engadine (Swiss portion of the Upper Inn valley), as well as in certain districts of S. Tyrol. It is a Romance language, which has lagged behind its sisters, French, Italian, and Spanish, and is described by the first writers who mention it (in the 16th century) as a Lombard dialect. The earliest written document in the Engadine form of Ladin is a poem dated 1527 (published in 1865), and written by Johann von Traversa. In 1900 the Ladin language speakers of the Engadine numbered 5,000 out of a population of 8,275.

Lado, station, Bari country, E. Sudan, on the l. bk. of the White Nile, was founded by General Gordon in 1875, and, before the Mahdi rising, was capital of the Equatorial Province.

Lado Enclave, a region of the Upper Nile, Central Africa, between the Nile and the N.E. corner of the Belgian Congo. Area, about 15,000 sq. m.; pop. est. at 250,000. It was leased to the Congo Free State during the life

of Leopold, king of the Belgians. On his death it reverted to the Sudan government.

Ladoga, LAKE (also called 'Nevo'), largest lake in Russia and in Europe, covering an area of more than 6,900 sq. m., with an extreme length of over 125 m. (N. to S.), and a mean breadth of 62 m. (E. to W.), lying between 60° and 61° N. lat., and cut about the middle by the 31st degree of E. long. It has three principal tributary rivers—(1) the Voksa or Wuoxen, entering the lake on the w. from Lake Saima; (2) the Svir, flowing in on the E. from Lake Onega, and properly an upper course of the Neva; and (3) the Volkov, debouching on the s. from Lake Ilmen and Old Novgorod. The coast-line of the w. and N. is often rocky; on the s. and E. it is generally low, sandy, or marshy. The greatest ascertained depth is over 700 ft., while the mean depth is about 300 ft. The water is rich in fish. The Ladoga Canal was constructed along the s. shore (1861-6) to secure a safe passage to St. Petersburg in stormy weather. Navigation is open from May to November.

Ladon, in Greek legend, the dragon with a hundred heads which guarded, by Juno's orders, the apples in the gardens of the Hesperides. See Hesiod's *Theogonia*, Apollonius Rhodius, and Kingsley's *Heroes* (1856).

Ladrones, or **MARIANNE ISLANDS**, in Pacific Ocean, to the N. of Caroline Is., between 13° and 21° N. and 144° and 146° E., and E. of the Philippines, consist of ten volcanic islands, of which only four are inhabited—viz. Agrigan, Anatahan, Alamagan, and Pagan; and five coralline islands—viz. Guam, Rota, Aguijan, Tinian, and Saipan, all of which are inhabited except Aguijan. The total area (excluding Guam) is about 250 sq. m., and the pop. about 2,700. The

chief products are maize, cocoanut, coffee, cocoa, sugar, cotton, and tobacco, while the principal export is copra. The islands (except Guam) were purchased by Germany from Spain in 1899, and are administratively part of the German New Guinea Protectorate. The seat of government is on the island of Saipan. Guam (with the only town, Agafia) was occupied by the United States during the Spanish-American war, and by the treaty of 1899 was retained by them. Area, 200 sq. m., and the pop. 12,000, of which Agafia, the cap., contains about 7,500. The islands were first discovered by Magellan in 1521, and named Ladrones (Robbers) in allusion to the thievish propensities of their inhabitants. In 1688 the Spaniards obtained possession.

Ladybank, bur., Fifeshire, Scotland, 6 m. s.w. of Cupar; an important railway junction. Pop. (with Monkston) (1911) 1,340.

Ladybirds are beetles belonging to the family Coccinellidae, and are of great economic importance because they feed entirely on aphides, scale insects, mites, and similar destructive forms. They are highly coloured, and exude, when attacked, a fluid of unpleasant smell and taste. The body is rounded, flat below and strongly convex above; the antennae are short and slightly clubbed; the feet are apparently three-jointed, though a small additional joint is also present. The larvae live exposed, and may often be seen running over plants in search of the aphides on which they feed. Some forty species of ladybirds occur in Britain. The seven-spot ladybird is the most common species. All show a remarkable range of colour variation, for which see Bateson's *Materials for the Study of Variation* (1894).

Ladybrand, tn., Orange River prov., S. Africa, 50 m. E. of Bloemfontein. It was so named after the wife of President Brand. Pop. about 4,000 (whites, 500).

Lady Day. Lady Day, or the Feast of the Annunciation, the 25th day of March, is quarter day in England and Ireland.

Lady Fern, the popular name of a British fern, *Asplenium Filix-femina*. It is variable in size and detail, of very graceful habit, and of thin, almost transparent texture; and its colour is a most delicate green. The fronds are lanceolate and bipinnate, and are developed from the summit of the caudex. The venation is very distinctly visible on account of the thinness of the texture. Many varieties are found wild, such as *marinum*, whose fronds taper from their centres towards either extremity, *latifolium*, and *convexum*, whose fronds are much narrower than in the common type.

Lady Margaret Hall, college for women, Oxford, was founded in 1878 and opened in 1879. It is established on the principles of the Church of England, with liberties for other religious bodies. The students, who number fifty-four, are prepared for the examinations of Oxford University, and attend its classes. Fees for board and residence are £75 per annum, besides fees for tuition, which average about £28 per annum.

Lady's Mantle. See ALCHEMILLA.

Ladysmith, the third largest town of Natal, on the Klip R., 80 m. N.N.W. of Pietermaritzburg. It lies in a hollow surrounded by distant hills. During the South African war it was besieged by the Boers for four months (Nov. 2, 1899, to Feb. 28, 1900). Within twelve miles of the town is a productive coal area. Pop. about 5,500 (Europeans, 2,600).

Lady's Slipper. See CYPRI-PEDIUM.

Lady's Smock, or CUCKOO-FLOWER. See CARDAMINE.

Laeken, N.W. suburb of Brussels, Belgium, with a royal palace, built in 1782-4, and in great part rebuilt after a fire in 1890, the usual summer residence of the Belgian royal family, and a Jardin Colonial (since 1900). Noted for its manufacture of carpets. Pop. 32,000.

Lælia, a genus of tropical American orchids, allied to the genus *Cattleya*, being distinguished therefrom by the possession of eight pollen masses instead of four. They have fleshy oblong leaves, bear flowers of great beauty, and are much valued by gardeners. Their cultivation is similar to that of *Cattleya*. Among the species are *L. Diglyana*, very free-flowering, purple, lilac, and white; *L. harpophylla*, orange, white, and scarlet; *L. purpureata*, crimson and white; *L. albida*, a sweetly scented species, white, yellow, and pink; *L. anceps*, lilac, very floriferous; and *L. præstans*, a dwarf species, rose and purple.

Lælius. (1.) **GAIUS LÆLIUS** (c. 235 B.C.) was a close friend of Scipio Africanus the elder, whom he assisted both in his Spanish and his African campaign as his lieutenant. Lælius commanded the Roman fleet at the capture of New Carthage in 210 B.C., and at Zama, 202 B.C. He was chosen prætor of Sicily in 196, and consul in 190 B.C. The date of his death is unknown. (2.) **GAIUS LÆLIUS** (c. 186 B.C.), son of the above, was tribune of the *plebs* (151), prætor (145), and consul (140). But he is known in history less as a man of action than as a leader of culture, and the friend of the philosopher Panetius (who induced him to become a Stoic), the historian

Polybius, and the poets Terence (whom he assisted in the composition of his *Comedia*) and Lucilius. From his erudition he got the surname of 'Sapiens' or the 'Philosopher.' He is still more famous for his friendship with Scipio Africanus the younger, which is immortalized in Cicero's *Lælius sive de Amicitia*. He was noted as an orator, and a few titles of his speeches and one fragment are extant. See Mommsen's *Hist. of Rome*; and for the younger Lælius, Cicero's works, especially the *Lælius sive de Amicitia*, and *De Oratore*.

Lænas, the surname of a plebeian family belonging to the Popilian clan in ancient Rome, of which perhaps the most noteworthy member was Gaius Popilius Lænas, who stopped the invasion of Egypt by Antiochus Epiphanes of Syria. He was consul in 172 B.C.

Laënnec, RENÉ THÉOPHILE HYACINTHE (1781-1826), French physician, born at Quimper; became an army surgeon (1799), editor of the *Journal de Médecine* (1814), and principal physician at the Hôpital Necker (1816), where he invented the stethoscope, and wrote his *Traité de l'Auscultation Médiate* (1819), which has been translated into many languages. In 1823 Laënnec succeeded Hallé as professor of medicine at the Collège de France, which chair he changed the following year for that of clinical medicine. He died of phthisis. See Bayle's *Encyclopédie* (1834), Lallour's *Notice Historique sur Laënnec* (1868), and Saintignon's *Laënnec, sa Vie et son Œuvre* (1904).

Laer, vil., Prussia, in Westphalia, 2 m. s.e. of Bochum. Pop. (1910) 7,080.

Laertes, in ancient Greek legend king of Ithaca, was the son of Acrisius, husband of Anticlea, and the father of Odyssaeus.

In his youth he took part in the Calydonian hunt and the Argonautic expedition. Athene restored his youth (*Odyssey*, xxiv.), so that he could help Odysseus in the fight against the Ithacans. See Homer's *Odyssey*, xi. 24, and Apollodorus, i. 9.

Laertius, DIogenes. See DIogenes LAERTIUS.

La Esperanza, tn., Honduras, 110 m. w. of Tegucigalpa. Pop. 11,500.

Lastrigones, in ancient Greek legend, a race of savages and cannibals whom Odysseus encountered in his wanderings. Greek writers placed them on the east coast of Sicily, Roman on the south coast of Latium; but Homer's description of the land as one 'where a sleepless man might earn a double wage, for nigh each other are the courses of day and night,' implies that, if there is any real basis to his fiction, it is some sailor's story of the far north with its long days and short nights. See Homer's *Odyssey*, x. 80. S. Butler in *The Authoress of the Odyssey* (1897) holds the city to be Cefalu, which is the only place therabouts where relays of fresh milk come in twice in the day. The name may be connected with modern Ital. *lastricare* = to pave roads with stone; and at Cefalu and Eryx (alone in Sicily) there are megalithic remains.

Lafarge, JOHN (1835-1910), American painter, born in New York; studied under Couture in Paris, and W. M. Hunt. He devoted himself to mural decoration, and to the development of the art of stained glass. He was the author of *Considerations on Painting* (1895), *An Artist's Letters from Japan* (1897), *Great Masters* (1903), and *One Hundred Masterpieces of Painting* (1904-5). See Waern's *John La Farge*.

La Farina, GIUSEPPE (1815-63), Italian author and politician, born at Messina. In 1848 he established

L'Alba, a democratic journal, advocating Italian unity and freedom. In the Parliament of 1849 he was successively minister of public instruction, public works, and of the interior; but through his opposition to Ferdinand, he was compelled to take refuge in France. Among his works are *Istoria della Rivoluzione Siciliana* (1853) and *Sulle presenti Condizioni d'Italia* (1860). His *Scritti politici* (1870) and his *Pistolario* (1869) were edited by Franchi.

Lafayette. (1.) City of Indiana, U.S.A., cap. of Tippecanoe co., situated in the w. part of the state, on the Wabash R., 130 m. s.e. of Chicago. Manufactures soap, machinery, farming implements, cars, and wagons, and has lumber mills. Pop. (1910) 20,081. (2.) Town, U.S.A., Louisiana, on Vermilion R. Manufactures sugar and cotton-seed oil. Pop. (1910) 6,392.

Lafayette, MARIE JEAN PAUL ROCH YVES GILBERT MOTIER, MARQUIS DE (1757-1834), French soldier and statesman, was born at the castle of Chavagnac in Auvergne. He married and entered the army at an early age. In 1777 he assisted the American colonists in their war with England, when his military knowledge was of great value. Lafayette, who commanded a division in America, was present at Yorktown (1782), and was publicly thanked by Washington for his services. During the war he imbibed republican views, and in the early days of the French revolution led the minority of the nobility in the States-General to join the Tiers-Etat (June 25, 1789). After the fall of the Bastille on July 14, Lafayette became commander-in-chief of the National Guard. Throughout 1790 he let things drift, with the result that on the Champ de Mars in 1791 he was forced to fire upon the mob.

Thenceforward he was hated by the Jacobins and distrusted by the royalists. On the outbreak of the war with Austria in 1792 he was placed in command of an army on the frontier. After the overthrow of the monarchy on Aug. 10, 1792, in endeavouring to escape across the frontier he was captured by the Austrians, who imprisoned him for five years. On the restoration of the monarchy in 1815 he became a prominent supporter of liberal ideas, and was the acknowledged leader in the revolution of 1830, when he commanded the National Guards. In 1824 the American Congress granted him a large sum of money and an estate. See Lafayette's *Mémoires, Correspondance et Manuscrits* (1837-40), La Bédollière's *Vie politique du Marquis de La Fayette* (1833), H. Morse Stephens's *History of the French Revolution* (1886-91), Tuckerman's *Life of Lafayette* (1889), Charavaray's *Le Général La Fayette* (1895), Tower's *The Marquis de La Fayette in the American Revolution* (1895), and Edith Sichel's *Household of the Lafayettes* (1897).

Lafayette, MARIE MADELEINE PIOCHE DE LA VERGNE, COMTESSE DE (1634-93), French novelist, was born at the castle of Chavagnac, Auvergne. She was known in the circles of 'Les Precieuses' under the name of Feliciane. Like Madame de Sévigné, she proved herself a brilliant letter writer; and through her novels, *Zayde* (1670) and *La Princesse de Clèves* (1678), anticipated the modern novel. She also wrote a *Histoire d'Henriette d'Angleterre* (posthumously published 1720), and *Mémoires de la Cour de France pour les Années 1688 et 1689* (1731). Her *Ouvres*, with the observations of Delandine, were published in 8 vols. (1786); *Ouvres Complètes*, in 5 vols. (1812); *Lettres*, by L. S. Auger (1823); and *Mémoires*,

ed. by Asse (1890). See Sainte-Beuve's *Portraits des Femmes*, and D'Haussonville's *Madame de La Fayette* (1891).

La Ferté-Mace, comm., France, in Orne dep., 14 m. s.e. of Flers; has textile industries. Pop. 6,500.

Laffitte, JACQUES (1767-1844), French politician and banker, born at Bayonne; was governor of the Bank of France (1814). He financed the second revolution, and became prime minister under Louis Philippe (1830-1). Fer-vently democratic, Laffitte refused all titles, and his political expenditure having ruined him, a national subscription was raised (1837), with which he started a new bank — 'Banque Sociale.' See *Souvenirs de Jacques Laffitte, racontés par lui-même*, but written by C. Marchal (1844).

Laffitte, PIERRE (1823-1903), French positivist, was born at Begney (Gironde). In Paris he became the friend and disciple of Comte. His works include *Les Grands Types de l'Humanité* (1874) and *Cours de Philosophie Première* (1889-95).

La Fontaine, JEAN DE (1621-95), French poet and fabulist, born at Château-Thierry, Champagne; was educated for the church, which he abandoned for law, and subsequently for a rangership of the duchy of Château-Thierry. From domestic worries he sought solace in literary labours. For some time he resided alternately at Paris, where he found a patron in Fouquet, and at his native place, where the Duke and Duchess of Bouillon held him in much esteem. The first book of his *Contes* (Tales)—1664—won popularity, and secured for him the favour of Molière, Racine, and Boileau. With them he formed the famous quartette of the 'Rue du Vieux Colombier.' In 1672 he was invited to make his home in the household of

Madame de la Sablière, one of the leaders of the most brilliant and intellectual coteries in the capital, where he resided till her death, in 1692. Meantime he augmented his fame by the publication of the second book of his *Contes* and of the first six books of his inimitable *Fables* (1668), the final portion of the latter being issued in 1678. His reputation was now at its height, and in 1684 he was elected to the Academy. His *Fables* have been translated into almost every European language. The standard editions of his *Oeuvres Diverses* are those of Walckenaer (1826), and the edition in the series entitled *Les grands Ecrivains de la France* (1883). One of the best biographies of La Fontaine will be found in the *Nouvelle Biographie Générale*. See also Racine's *Mémoires*, La Harpe's *Eloge de La Fontaine*, Sainte-Beuve's *Portraits Littéraires*, Taine's *Essai sur les Fables de La Fontaine* (ed. 1903), Walckenaer's *Histoire de la Vie et des Ouvrages de La Fontaine*, Saint-Marc Girardin's *La Fontaine et les Fabulistes* (ed. 1876), Lafenestre's *La Fontaine* (1885), Gruber's *Lafontaines Leben und Wirken*, and Collins's *La Fontaine and other French Fabulists* (1882).

Lafontaine, SIR LOUIS HYPO-LITE (1807-64), Canadian statesman, born at Boucherville, Lower Canada; became leader of the French party in the Canadian Parliament. He became attorney-general (east), member of Executive Council, and premier (1842-4), and held the same offices in 1848-51. See Dent's *Canadian Portrait Gallery* (1881); David's *Sir L. H. Lafontaine* (1872).

Lafuente, MODESTO (1806-66), Spanish satirist, journalist, poet, and historian. Under the names of 'Fray Gerundio' and 'Tirabeque' he wrote a number of

satirical articles and sketches, which were very popular (1838-46); but he is now best known by his voluminous *Historia General de España* (1850-67).

Lagarde, PAUL ANTHON DE (1827-91), German Orientalist, born at Berlin; was a teacher there (1855-66), and in 1869 became professor of Oriental languages in Göttingen. A list of his works is given in Lichtenberger's *History of German Theology in the 19th Century* (trans. 1889). See Anna de Lagarde's *Paul de Lagarde, Erinnerungen aus seinem Leben* (1894).

Lagden, SIR GODFREY YEATMAN (1851), British commissioner for native affairs in S. Africa (1901-7), a native of Cambridgeshire; was successively secretary to the Transvaal Protectorate (1878); colonial secretary, Sierra Leone (1883); resident commissioner of Basutoland (1885); British commissioner, Swaziland (1892); and commissioner for native affairs, and member of Council, in the Transvaal (1901). He has published *The Basutos* (2 vols. 1909).

Lagenaria, a genus belonging to the order Cucurbitaceæ, with only one species, *L. vulgaris*, the bottle-gourd, which is a native of India, the Moluccas, and Abyssinia. It bears large white flowers.

Lager. See BREWING.

Lagerlöf, PETRUS (1648-99), Swedish scholar, became professor of logic at Upsala (1682), of poetry (1684), and of elocution (1687), and royal historiographer (1695). His poems, both in Latin (*Carmina*) and in Swedish, were much appreciated by his contemporaries.

Lagerlöf, SELMA (1858), Swedish novelist and leader of the modern romantic reaction in Sweden; won an instantaneous popularity by the publication of her *Gösta Berlings Saga* (1891; Eng. trans. 1898), a modern treat-

ment of old legends with a mystical undercurrent and an idealistic aim. It was surpassed by *Antikrists Mirakler* (1897; Eng. trans. 1899), an eloquent plea for Christian socialism. Her other works include *En Herrgårdssaga* (1899), *Drottningar i Kungahälla*, (1899; trans. 1901), and *Jerusalem* (2 vols. 1902-3). In 1909 she won the Nobel prize for literature. See Levertin's *Selma Lagerlöf* (1904).

Lagerstroemia, a genus of tropical and subtropical trees and shrubs belonging to the order Lythriaceae. The Chinese *L. Indica*, the crape myrtle, is largely cultivated in the southern states of America. The only other species commonly grown is *L. Flos-Reginae*.

Laghouat, or EL AGHUAT, tn. and military headquarters in the Algerian Sahara, in dep. of and 200 m. s. of Algiers. Pop. 7,000.

Lago Maggiore. See MAGGIORE.

Lagomys, the genus to which belong the Pica, or tailless hares.

Lagonoy, pueblo, Luzon I., Philippines, prov. Ambos Camarines, on a small riv. 5 m. from its mouth in Lagonoy Bay. Pop. 10,000.

Lagoon, a basin of water, salt, brackish, or fresh, cut off from the sea, with which it may or may not be in actual communication. Lagoons are generally shallow, and they may be grouped into (1) the central or fringing lagoon of a coral island; (2) deltaic lagoons (see DELTA); and (3) the sand-bordered lagoons of the coast, which are usually elongated and parallel to the coast. Lagoons formed of a sand-barred estuary, such as those of the N. Black Sea or S. Devon coast, are termed limans.

Lagos. (1.) A former territory of British West Africa, which comprised the colony proper and the protectorate. Since 1906 it

has formed the western prov. of Southern Nigeria. The area is est. at 29,000 sq. m., and the pop. at 1,500,000 (Europeans, 500). The soil is generally fertile, the principal products being palm-oil, cotton, kola-nuts, mahogany, rubber, ivory, gum, and cocoa. The climate is unhealthy. See NIGERIA, SOUTHERN. (2.) Chief tn. of Southern Nigeria, on Ogun R., about 50 m. E. of the frontier of Dahomey, with the only natural harbour to be found on the Slave Coast for a distance of 1,000 m. It is an important commercial town, and a port of call for nearly all West African steamers. Pop. 53,000 (Europeans, 400). (3.) Seaport, Algarve prov., Portugal, 20 m. E.N.E. of Cape St. Vincent; has a fine and well-sheltered harbour. There are important tunny fisheries. Pop. 8,500. (4.) Town, Jalisco state, Mexico, 15 m. N.W. of Guanajuato, is frequently called Lagos de Moreno, from its defender, Pedro Moreno, who was killed in battle with the Spaniards in 1817. Pop. 14,000.

Lagos, BATTLE OFF, a naval fight (Aug. 18, 1759) between the French under De la Clue, who was preparing to invade Britain, and the British under Boscawen, in which the latter were victorious. See Political History of England, vol. ix. (1909).

La Grange. (1.) County seat of Troup co., Georgia, U.S.A., 60 m. s.w. of Atlanta; has cotton and flour mills and factories of carriages, and dairy products. Pop. (1910) 5,587. (2.) Town, Cook co., Illinois, U.S.A., 13 m. w. by s. of Chicago; has dairying industry. Pop. (1910) 5,282.

Lagrange, JOSEPH LOUIS, COMTE (1736-1813), French mathematician, born at Turin. After he had been professor at Turin, Frederick the Great appointed him to succeed Euler as director of the Berlin Academy, a

post he held for twenty years. In Berlin Lagrange published many original dissertations on applications of the higher mathematics. Among the most important results obtained by him is the law, given in his *Variations of the Elliptic Elements*, that the action and reaction of all the planets in our system can only produce *periodic* changes, the general equilibrium, therefore, remaining permanently stable. Before going to Berlin he had completed his *Calcul des Variations* (1762), and after his return to Paris he published his great work, the *Mécanique Analytique* (1788). Ten years later appeared the *Théorie des Fonctions Analytiques* (1797). On his death he was buried in the Panthéon. All Lagrange's works are stamped by originality, power, and elegance. See *Eloge de Lagrange* (*Mém. de l'Institut pour 1812*); Virey et Potel's *Précis historique sur la Vie et la Mort de Lagrange* (1813); Cossali's *Eloge de Lagrange* (1813). An excellent edition of his works, *Oeuvres Complètes de Lagrange*, edited by Serret and Darboux, was published in 14 vols. (1867-92).

La Grita, or GRITA, tn., Venezuela, S. America, on riv. Grita, 60 m. s.w. of Merida; has extensive coffee, tobacco, and sugar plantations. Pop. 10,500.

La Guayra, chief port of Venezuela, 10 m. n. of Caracas. The harbour is protected by large breakwaters, which enclose an area of 80 ac. The climate is excessively hot: mean temp. 83° F. Coffee, cocoa, and hides are exported. In 1903 the fort was bombarded by the British and German fleets to enforce the settlement of claims against the government of Venezuela. Pop. 12,000.

Laguna. (1.) Province, Luzon, Philippines, at the E. of Manila Bay. The chief products are

sugar, corn, rice, coffee, tobacco, and cocoanuts. Area, 752 sq. m. Pop. 150,000. Cap. Santa Cruz, 40 m. s.e. of Manila. (2.) Town, isl. of Tenerife, Canaries, on N. shore, near Santa Cruz; was formerly the capital of the Canaries. Produces oranges, raisins, wheat, and tobacco. Pop. 13,000. (3.) Small port in Santa Catharina, Brazil, on a lagoon 75 m. s. of Florianopolis; terminus of Santa Catharina Ry. There are rich coal fields in the neighbourhood.

Lagunaria, a genus of evergreen tropical Australasian trees belonging to the order Malvaceæ. It has long, ovate leaves with entire margins, and bears large, rose-coloured flowers similar to those of Hibiscus.

Lagurus, or HARE'S-TAIL GRASS, a genus of grasses containing only one species, *L. ovatus*, a native of the southern coast regions of Europe.

La Habana, prov. of Cuba, W. Indies, crossing the w. part of the island from the Gulf of Mexico to the Caribbean Sea. Area, including the Isle of Pines, 2,772 sq. m. The forests are valuable. Cigars and cigarettes are manufactured. Pop. 425,000. Cap. Havana.

La Hague. See HAGUE, THE.
La Halle, ADAM DE (c. 1240-c. 87), French poet and dramatist, nicknamed 'the Hunchback of Arras,' is accounted the pioneer of French drama, because of his *jeux*, or masques, chief of which are the *Jeu de la Feuillée*, the *Jeu de Robin et Marion* (the latter derived from the legend of Robin Hood), and a poem, the *Congé*. His *Oeuvres Complètes* were published by Coussemaker (1872), and his *Chansons* by Berger (1900). See *Life* by Guy (1898).

La Harpe, JEAN FRANÇOIS DE (1738-1803), French poet and critic, was born in Paris. In 1763 he achieved popularity with *Warwick*, a tragedy; but his later

dramatic works, including *Timoleon* (1764), *Pharamond* (1765), *Jean de Naples* (1781), and *Coriolan* (1784), were all more or less failures. His best work, *Cours de Littérature* (1799-1805), is still of value as a critical history of French literature.

Laharpur, tn., Sitapur dist., Oudh, India, 58 m. N. of Lucknow. Pop. about 12,000.

Lahn, riv., prov. Hesse-Nassau, Germany, rises in the Rothaar in s. of Westphalia, flows s. and s.w. past Marburg and Giessen with their universities, Wetzlar with its cathedral, and the well-known health resort of Ems, and enters the Rhine 6 m. above Koblenz. Length, 135 m.

La Hogue. See HOOGUE.

Lahore. (1.) Division of Punjab, British India, comprising the districts of Lahore, Amritsar, Montgomery, Multan, Jhang, Gurdaspur, and Lyallpur. Area, 24,872 sq. m. Pop. (1901) 5,466,644. It is irrigated by the Bari Doab Canal and the branches of the Sutlej. Wheat, barley, maize, rice, cotton, sugar, tobacco, oil seeds, and opium are grown. (2.) Capital of district of same name, near the l. bk. of the Ravi, 31° 36' N. and 74° 18' E. It is the railway centre of the province. Its carpets and silk and woollen goods are noted. Other industries include gold and silver wares, pottery, and arms. Lahore's era of splendour was coincident with the reign of Akbar (1556-1605). The Sikhs took it in 1758, and later Ranjit Singh became master of the Punjab. A period of anarchy followed his death in 1839. In 1846 the British Council of Regency was established, and in 1849 the young maharajah transferred the government of the Punjab to the East India Company. Lahore thenceforth became the capital of a British province. Pop. 203,000.

Lahot, vil. in Sumatra, 3° 12' S. and 104° 36' E., at the E. base of Mt. Dempo; important trade centre.

Lahr, tn., Baden, Germany, 29 m. N. of Freiburg; manufactures tobacco, cardboard, cottons, chicory, hats, leather wares, and horse-hair goods. Pop. (1910) 15,192.

Laibach, chief tn. of the Austrian prov. Carniola, and (since 1461) episc. see, on a tributary of the Save, 83 m. s.w. of Graz. Iron, cotton, tobacco, and pottery are manufactured. From 1816 to 1849 Laibach was the capital of the kingdom of Illyria. A congress of the European Powers met here in 1821. Pop. (1911) 41,711.

Laidlaw, WILLIAM (1780-1845), friend and amanuensis of Sir Walter Scott, born at Blackhouse, Selkirkshire; became acquainted with Hogg (whom his father employed as a herd) and Scott, the latter of whom he supplied with materials for the *Minstrelsy of the Scottish Border*. In 1817 he settled at Abbotsford as factor. Laidlaw was himself a poet, as his *Lucy's Flittin'* attests. See Lockhart's *Life of Scott*.

Laing, DAVID (1793-1878), Scottish historian and antiquary, born at Edinburgh; became secretary to the Bannatyne Club (1823), and edited seventeen of its publications, as also five works for the Abbotsford Club and three for the Hunterian Club. He was also keeper of the Signet Library, Edinburgh (1837). Among other works edited by Laing were *Select Remains of the Ancient Popular Poetry of Scotland* (1822), *Early Metrical Tales* (1826), *Poems of William Dunbar* (1834; supplemented 1866), *Robert Baillie's Letters and Journals* (1841-2), and the *Works of John Knox* (1846-64). He bequeathed his collection of MSS. to Edinburgh University. See Stevenson's *Notices of David Laing* (1878).

Laing, MALCOLM (1762-1818), Scottish historian, born in Orkney. He wrote the final volume of Henry's *History of Great Britain* (1793), and in 1800 published a *History of Scotland from 1603 to the Union*. To this, in 1804, he added a dissertation on Queen Mary's complicity in the Darnley murder. He also published an edition of Ossian's poems.

Laing, SAMUEL (1812-97), British author and railway administrator, born at Edinburgh. He became secretary to the railway department of the Board of Trade, and was for several years chairman of the London and Brighton Ry. Co. He is best known, however, as a writer of popular works on scientific subjects, including *Modern Science and Modern Thought* (1885), *A Modern Zoroastrian* (1887), *Problems of the Future* (1889), *Antiquity of Man* (1891), and *Human Origins* (1892).

Laing's Nek, defile, Drakensberg Mts., Natal, 16 m. from its N. frontier. The railway to Charleton here passes through a tunnel 2,213 ft. long. Laing's Nek was the scene of a Boer victory over the British under Colley in 1881.

Lairesse, GÉRARD DE (1640-1711), Dutch painter, born at Liège; became a pupil of Bartholéet Flémalle and of Poussin, and settled in Amsterdam. His paintings are of the severely classical school. His best work, the *Death of Germanicus*, is in the Kassel Gallery. Other examples are in the Louvre, and at Berlin.

Lais, the name of two famous courtesans in ancient Greece. (1.) Probably a native of Corinth, lived about the time of the Peloponnesian war; one of her lovers was the philosopher Aristippus. (2.) A native of Hycare in Sicily, was brought to Corinth at an early age. She lived during the 4th century B.C.,

being a contemporary and rival of Phryne. One of her favourites was Diogenes.

Laissez Faire, an economic maxim which has become the designation of the policy of unrestricted competition and no state interference. Its origin is attributed to Legendre in an interview of French merchants with Colbert about 1680, protesting against hindrances to commerce: 'Laissez-faire, laissez-passer.'

Laius, in ancient Greek legend, was king of Thebes, son of Labdacus, and father of Oedipus. An oracle prophesied his death at the hands of Oedipus, whom he therefore exposed at birth, but owing to an extraordinary series of events Laius fell by his son's hand. The story is finely set forth in Sophocles's *Oedipus Tyrannus*.

Lai-ying, city, China, in prov. of Shan-tung, 60 m. w.s.w. of Wei-hai-wei; has silk industries and gold-mining. Pop. 50,000.

Lake. A lake is a basin of water which is not in communication with the sea. To volcanic action are due crater lakes, such as the lakes of Albano and Nemi, the Eifel and Auvergne; and the lava-dammed lakes, such as the Lac d'Aydat, in Auvergne. Landslips have dammed valleys and formed lake basins, as the Gohna lake, formed in the Himalaya in 1894. Sinks or shallow holes in porous limestone may be choked and form lakelets, and the polyes of the Karst are temporary lakes, due to the rise of ground waters in these dissolved and sunken areas. Rivers form lakes by the gradual dissolution of soluble limestone through lateral erosion, as in Loughs Ree and Derg; and underground lakes are due to similar decomposition of the rock.

The Lake Waters.—Lakes may be divided into fresh-water, brackish, and salt lakes. The salinity of the water is greatest in lakes

with no outlet in rainless regions. The Dead Sea and Great Salt Lake are among the saltiest lakes, and are under such conditions. Every transition from them to the pure fresh-water lakes can be found. See F. A. Forel's *Handbuch der Seenkunde* (1901). For quiverings of the lake waters, see SEICHES. For the fresh-water forms and flora of lakes, see GEOGRAPHICAL DISTRIBUTION.

Lake Charles, city, Calcasieu par., Louisiana, U.S.A., 190 m. w. of New Orleans. Its leading industries are oil production, sulphur mining, and lumber manufacturing. The city is situated in a rich rice-producing district. Pop. (1910) 11,449.

Lake City. (1.) Town, Florida, U.S.A., the capital of Columbia co., 60 m. w. of Jacksonville. The town stands in a cotton-growing district, and has trade in lumber, turpentine, and farm products. Pop. (1910) 5,032. (2.) Town, Wabasha co., Minnesota, U.S.A., 55 m. s.e. of St. Paul; is a favourite summer resort. There are flour mills and wagon works. Pop. 3,000.

Lake Dwellings. See PILE DWELLINGS.

Lake District of England comprises adjacent parts of Cumberland, Westmorland, and Lancashire. Windermere, about $10\frac{1}{2}$ m. long by less than 1 m. in breadth, is situated in the s.e., and connected with Rydal Water, Grasmere, Elther Water, and Esthwaite. More to the w. is Coniston Water, dominated by the peak called Coniston Old Man. In the n.e. is Ullswater, with Hawes Water to the s.e.; and to the w., beyond Helvellyn, Thirlmere, now the head reservoir of the Manchester water supply. North-west of Thirlmere are Derwentwater and Bassenthwaite, and n.e. the mountain group in which rise Skiddaw and Scafell. Buttermere, Crummock Water,

and Loweswater lie s.w.; Ennerdale still further s.w., and Wast Water s.e. of the latter. Sty Head Pass, n.e. of Wast Water, is famed as the wettest place in England. There are several waterfalls. See Rawnsley's *Literary Associations of the English Lakes* (1894; newed. 1901); Wordsworth's *Description of the Scenery of the English Lakes* (1823); Professor W. Knight's *English Lake District* (1878), and *Through the Wordsworth Country* (1887); Collingwood's *The Lake Country* (1902); Cooper and Palmer's *English Lakes* (1905); and Rawnsley's *Round the Lake Country* (1909).

Lake School of Poets, THE, a title first applied in derision by the *Edinburgh Review* to the group of poets who ranged themselves round the poet Wordsworth in the Lake district of England. Other poets who have derived inspiration from the romantic beauty of the Lake district, but are not directly associated with the school, are Mrs. Hemans, Matthew Arnold, Edward Fitzgerald, Tennyson, Gray, and Charles and Mary Lamb.

Lake Geneva, Huron, etc. See GENEVA, HURON, etc.

Lake of the Thousand Islands. See ST. LAWRENCE.

Lake of the Woods, large sheet of water, Ontario, Canada, touching Manitoba on the w. and Minnesota, U.S.A., on the s. It is fed by the Rainy R., and the Winnipeg R. takes the surplus to Lake Winnipeg. Length, 65 m.; circumference, 300 m.

Lakes. See PIGMENTS.

Lakewood, tn., Cuyahoga co., Ohio, U.S.A., a residential suburb of Cleveland. The population has increased from 3,355 in 1900 to 15,181 in 1910.

Lakh, from Sanskrit *laksha*, 'one hundred thousand.' The word is employed in India to signify 100,000 rupees, of which

the nominal value is £10,000 and the actual value about £6,666.

Lakhimpur, or LIKHIMPUR, great tea-growing dist. in the Brahmaputra valley, Eastern Bengal and Assam, India; has numerous tea-gardens; and there are coal mines and petroleum wells, worked by the Assam Railways and Trading Company. The chief oil wells are at Digboi. The oil is refined at Margherita. The civil headquarters are at Dibrugarh. Area, 3,724 sq. m. Pop. 400,000.

Laking, SIR FRANCIS HENRY (1847), physician in ordinary to King Edward VII. and King George v. He was also surgeon-apothecary to Queen Victoria (whom he attended in her last illness).

Lakshmi, or Sri, in Hindu mythology, the consort of Vishnu and the goddess of fortune and beauty; generally represented in gold, seated upon a lotus. She was mother of Kama, the Hindu god of love.

Lalande, JOSEPH JÉRÔME LE FRANÇAIS DE (1732-1807), French astronomer, was born at Bourg. Dispatched in 1752 from Paris to Berlin, to make observations of the moon's parallax there, he was on his return appointed adjunct-astronomer to the Paris Academy. He was professor of astronomy at the Collège de France (1762-1807). His observations of 50,000 stars, given in *Histoire Céleste Française* (1801), proved invaluable, and he wrote several successful popular works. The Lalande Prize was instituted by him in 1802, to reward the chief astronomical performance of each year.

Lalin. (1.) Township, N.W. Spain, in prov. of and 30 m. N.E. of Pontevedra, in a mountainous agricultural district; has paper mills and tanneries. Pop. 18,000. (2.) Walled town of Manchuria, 55 m. S.S.E. of Harbin, on a

river of same name. Pop. about 20,000.

La Linea, tn., Spain. See LINEA.

Lalita - Vistara, one of the nine principal religious works of the Buddhists, containing the life and doctrines of the Buddha, S'akyamuni. An English translation has been made from the Sanskrit text, and a French one (by P. E. Foucaux) from the Tibetan. See Burnouf's *Introduction à l'Histoire du Buddhism Indien* (1844), and *Transactions of the Bengal Asiatic Society*.

Lalitpur, tn., Lalitpur dist., United Provinces, India, 110 m. s. by E. of Gwalior; has a large trade in oil seeds, hides, and ghi. Pop. 11,000.

Lallunge, or LALGANJ, tn., Bengal, India, 25 m. N.N.W. of Patna. Pop. 12,500.

Lally-Tollendal, THOMAS ARTHUR, COMTE DE (1702-66), French general and administrator, was born at Romans (Drôme); and after a career of distinction in the French army, as also in the Jacobite expedition to Scotland (1745), was sent as commander-in-chief to the E. Indies (1756). At first successful against the British, he was deserted by the fleet under Laché, and, without food or supplies, forced back from Madras, and compelled, after a close blockade of eleven months, to surrender Pondichery (1761). On his return to France he was sent to the Bastille, and two years later brought to trial and beheaded. This judicial crime was exposed by Voltaire, and by the victim's son in 1773, and in 1778 Louis XVI. reversed the sentence. See *Life*, in French, by Hamont (1887).

Lally - Tollendal, TROPHIME GÉRARD, MARQUIS DE (1751-1830), French politician and author, son of the above, born in Paris. He represented the Parisian noblesse

in the Etats Généraux (1779); defended Louis XVI. (1789); retired to Switzerland (1791), but became minister of state, peer of France, and member of the Academy under Louis XVIII. (1815). His publications include *Plaidoyer pour Louis XVI.* (1795); *Défense des Enigres Français* (1794); and *Le Comte de Strafford* (1795).

La Louvière. See LOUVIÈRE, LA.

Lama. See LLAMA.

Lamachus. Athenian general in the Peloponnesian war. With Nicias and Alcibiades he commanded the expedition against Sicily in 415 B.C., and was killed at the investment of Syracuse (414 B.C.). He is represented as a brave and earnest soldier. See Thucydides, Aristophanes's *Acharnians*, and Plutarch's *Nikias*.

Lamaism. The religion of the Tartar races of Tibet, Mongolia, Manchuria, and Northern Nepal. Lhassa, the 'Rome' of Lamaism, is the capital of Tibet, and till recently was a forbidden city to the European. It seems probable that the nature worship of the nomad Mongol was touched by the precepts of Lao-Tze and Confucius and tinged by the preachings of Nestorian monks before it absorbed a Buddhism which had already lost its savour. Whatever the influences which helped to mould this faith, the acceptance of Buddha as an incarnation of the divine essence resulted in the establishment at Tibet of a hierarchy in the person of a Dalai Lama ('sea of wisdom'), whose judgment is supreme and unquestionable. The prayer of Lamaism is of Sanskrit origin, '*Om mani padme hum*' (Oh ! the gem in the lotus. Amen).

Encouragement of celibacy led to the foundation of lamaseries throughout the countries which acknowledge the creed. These monasteries, many largely en-

dowed and some capable of housing 30,000 individuals, are the churches, colleges, schools, and hospitals of the people, the resort of pilgrims, and the repositories of Lamaesque arts, science, and literature. The pontiff is established at Lhassa, but each lamasery has its 'living Buddha' or Grand Lama. A Grand Lama does not die, but, from time to time, he lays aside his human envelope and is rejuvenated. New 'living Buddhas' are always sought for and discovered in Tibet; and the choice usually falls on a boy between four and five years of age, amenable to the instruction and training required for his high position. See BUDDHISM, TIBET; also Waddell's *Buddhism of Tibet* (1895); Kloppe's *Die Lamaische Hierarchie und Kirche* (1859); and the works of Rhys-Davids on Buddhism.

Lama Miao. See DOLON-NOR.

La Mancha. See MANCHA, LA.

Lamantin, a name sometimes applied to the manatee and the dugong, in order to mark the distinctions between them and the extinct sea-cow (*Rhytina stelleri*). See SIRENIA.

Lamarek, JEAN BAPTISTE PIERRE ANTOINE DE MONNET, CHEVALIER DE (1744-1829), a French naturalist and evolutionist, and the ablest precursor of Darwin, was born at Barentin. While working in a banker's office in Paris he wrote his *Flore Française* (1778). As tutor to Buffon's son he travelled over Europe, visiting many of its famous gardens. In 1788 he became custodian of the herbarium of the Jardin du Roi, and later was associated with this garden as a professor of zoology. In 1809 he published his famous *Philosophie Zoologique*, and between 1815 and 1822 he published the seven volumes of his *Histoire des Animaux sans Vertèbres*. Lamarck was also a voluminous writer on other

scientific subjects. See Haeckel's *Dic Naturanschauung von Darwin, Goethe, und Lamarck* (1882); *Lamarck, par un Groupe de Transformistes, ses Disciples* (1887); Perrier's *Lamarck et le Transformisme Actuel* (1893); and Packard's *Lamarck* (1902).

Lamarckia, a genus of grasses containing only the one species, *L. aurea*. This is a native of the south of Europe and opposite coast-region of Africa. It is a low-growing annual, with pretty, crowded panicles of two-flowered spikelets.

La Marmora, ALFONSO FERRERO, CAVALIERE DEL (1804-78), Italian general and statesman, born at Turin. He distinguished himself during the Sardinian war of independence (1848), and as minister of war (1849-55) reorganized the army. During the Crimean war he commanded the Sardinian forces, and on his return again became minister of war. He commanded the troops in the Austrian war, was defeated at Custoza, and severely censured. In self-defence he wrote *Un po più di luce* (1873), which irritated Bismarck, and exposed La Marmora to a charge of having betrayed state secrets. See *Life*, in Italian, by Massari (1880).

Lamartine, ALPHONSE MARIE LOUIS DE PRAT DE (1790-1869), French poet, was born at Macon. After travelling in Italy he had some employment in the king's household, and subsequently in diplomacy. In his thirtieth year Lamartine published his first volume of poetry, *Premières Méditations Poétiques* (1820), which achieved an immediate success. In 1823 and 1825 Lamartine published three more volumes, *Nouvelles Méditations Poétiques* (1823), *La Mort de Socrate*, and *Le Dernier Chant de Childe-Harold* (1825), the last of which proclaims clearly enough whence

Lamartine drew his first inspiration in poetry.

In 1829 he was elected a member of the Academy. In 1830 he published his *Harmonies Poétiques et Religieuses*, in 1835 (in prose) *Voyage en Orient* (his experiences of a yachting tour), in 1836 *Jocelyn* (the history of a country person), in 1838 *La Chute d'un Ange*, and in 1839 *Recueilllements Poétiques*—all poems. It was about this time that Lamartine threw himself into politics upon the Moderate Liberal side. From 1835 to 1837 he was député for Bergues in the Nord, and from 1837 to 1848 député for Macon. In politics he played as notable but a less lasting part than in the field of literature. At the revolution of 1848, Lamartine rose to a very conspicuous place, especially as the defender of the 'tricolor' against the 'rouges.'

Under the empire Lamartine gradually sank into comparative poverty, having squandered a considerable patrimony, the fortune of his wife, and large literary gains; and he was obliged to write rapidly and superficially a great number of works in prose. Some poetry was intermingled (*Les Visions*, 1854), not of the highest quality. With a diminished lustre, Lamartine remained still one of the personages of French literature till his death. He was granted a pension by Parliament (1867), but his powers by that time were exhausted, and he died two years later. In addition to the works mentioned, Lamartine wrote—in verse, *Toussaint Louverture*, a tragedy (1850); and in prose, *Trois mois au Pouvoir* (1848), *Raphael* (1849), *Confidences* (1849), *Histoire de la Révolution*, 1848 (1849), *Geneviève* (1850), *Nouvelles Confidences* (1851), *Le Tailleur de Pierres de Saint-Point* (1851), *Graciella* (1852), *Histoire de la*

Restauration (1851-2), *Histoire des Constituants* (1854), *Histoire de la Turquie* (1855), and *Histoire de la Russie* (1856). His *Oeuvres Complètes* were published by Didot in 14 vols. (1849-50). See Falconnet's *Alphonse de Lamartine* (1840); Lurine's *Histoire Poétique et Politique de Alphonse de Lamartine* (1848); Sainte-Beuve's *Portraits Contemporains*, I., and *Causeries du Lundi*, I., IV.; Ronchaud's *La Politique de Lamartine* (1878); Alexandre's *Souvenirs sur Lamartine* (1884); Lady Domville's *Life of Lamartine* (1888); and Deschanel's *Lamartine* (1893).

Lamb, CHARLES (1775-1834), essayist, was born in the Temple, London. After some education at a little school off Fetter Lane, he was sent to Christ's Hospital in 1782, among the other new boys at the same time being Samuel Taylor Coleridge, with whom a friendship then began which ceased only with Coleridge's death in 1834. Lamb remained at Christ's Hospital until 1789, soon afterwards obtaining a nomination to a small clerkship in the South Sea House, where his elder brother John held office. Leaving the South Sea House after only a brief sojourn there, Charles Lamb, on April 5, 1792, entered the East India House, nominated thereto by his father's employer, Samuel Salt, M.P., and remained in its service until 1825.

The same year (1792) saw the death of Mr. Salt, causing the Lamb family to leave his quarters in the Temple for lodgings elsewhere. These were found at 7 Little Queen Street (where Trinity Church now stands); and there, on Sept. 22, 1796, an incident occurred which changed the whole character of Charles Lamb's life. His sister Mary, who had long been strange in manner, suddenly lost her reason and stabbed her mother fatally.

At the inquest Mary Lamb was found to be insane, and ordered to be confined in a public asylum; but Charles, on undertaking to be responsible for her, was allowed to arrange for private restraint. From that day until his death the welfare of his sister was his first consideration.

Charles Lamb's earliest literary efforts were in verse. In 1796 he contributed four sonnets to Coleridge's *Poems on Various Subjects*. In 1797 he contributed a whole section to the second edition of that work; and in 1798 he joined with Charles Lloyd, a young Quaker metaphysician, lately Coleridge's pupil, in the composition of a volume called *Blank Verse*, in which 'The Old Familiar Faces' and the most personal and feeling of all his poetical work is to be found. In the same year (1798) was published his first prose work, *Rosamund Gray*, a story beginning with the simplicity of Wordsworth in the *Lyrical Ballads*, very charmingly done, but continuing more in the manner of Mackenzie, whose novel in letters, *Julie de Roubigné*, Lamb had been reading. Another experiment, this time in irregular blank verse, followed in *John Woodvil*, an attempt to recapture the Elizabethan spirit seriously just as in 1795-6 Lamb had joined with James White, an old schoolfellow, in recapturing its comic spirit in *Falstaff's Letters*. *John Woodvil* was published in 1802, at Lamb's own expense, but it met with little favour.

Between 1800 and 1805 Lamb contributed paragraphs and epigrams to newspapers, but wrote nothing remarkable. Between 1805 and 1810, however, came a period of great productivity. Besides his India House work, he found time to write an unsuccessful farce, *Mr. H.*, produced at Drury Lane, Dec. 10, 1806, for

one night only; to begin his children's books for Mrs. William Godwin with *The King and Queen of Hearts* (1805), followed by *Tales from Shakespeare* (with Mary Lamb, 1807), *The Adventures of Ulysses* (1808), *Mrs. Leicester's School* (with Mary Lamb, 1809), *Poetry for Children* (with Mary Lamb, 1809), and *Prince Dorus* (1811, or earlier); to select his *Specimens of English Dramatic Poets who lived about the Time of Shakespeare* (1808); and to write a number of humorous letters and critical essays for Leigh Hunt's magazine, the *Reflector* (1810-11). Of these the best were the essays *On the Genius of Hogarth* and *On Shakespeare's Tragedies*, which, taken in connection with the *Dramatic Specimens*, showed the discerning that a new, courageous, and very discriminating critical mind was in their midst.

Then followed a curiously empty ten years, in which Lamb, to the best of our knowledge, wrote nothing but two or three essays, including the *Confessions of a Drunkard*, a few brief notes and theatrical criticisms in the *Examiner*, and a few epigrams in the *Champion*. In 1818 he collected his *Works*, which contained, however, very little that was new. But in 1820 came a change. In that year was founded the *London Magazine*. John Scott, the editor, acting, it is said, upon the suggestion of Hazlitt, asked Lamb to contribute. Lamb accepted the invitation, the essay on the South Sea House, signed 'Elia' (the name of an old South Sea House clerk in Lamb's day), appeared in the August number, and Lamb's ripest and best-known work had begun—in his forty-sixth year. Almost everything by which he is best known was written between 1820 and 1823. For five years Lamb continued with the *London Maga-*

cine. He then moved to the *New Monthly Magazine* for a while, and contributed to it the *Popular Fallacies*. He also gave William Hone, for his *Table Book* (1827), the fruit of his researches for notable passages in the Garrick collection of old plays in the British Museum; and in 1830 he collected his later poems to form a book, *Album Verses*, with which his young friend Edward Moxon (who married his ward, or adopted daughter, Emma Isola) might make a start as a publisher. A year later he issued a burlesque poem, *Satan in Search of a Wife*, and in 1833 a second collection of *Elia* essays. Lamb was pensioned by the East India directors in 1825. He was then living at Islington. Later he moved to Enfield, and then to Edmonton, where he died. Lamb was first and foremost an essayist. His *Elia* (1823) and the *Last Essays of Elia* (1833) are two volumes which stand quite alone in English literature. His charm of character and his whimsical humour shine through the delicate transparency of his style. The essays have the fascination of the living voice. Crab Robinson's *Diary* gives us many glimpses of this rare figure, but it is upon Talfound's *Memorials of Charles Lamb* (1837) and Final Memorials of Charles Lamb (1848) that all later biographies have been based. Other valuable character sketches are to be found in Hazlitt's essays, Wordsworth's poem on Lamb's death, Fitzgerald's *Charles Lamb* (1866), De Quincey's *London Recollections*, Barry Cornwall's *Memoir* (1866), and E. V. Lucas's *Life of Charles Lamb* (4th ed., revised, 1907). The best editions of Lamb's writings are *Life and Works*, ed. by Canon Ainger—*édition de luxe*—(12 vols. 1899-1900); *Works of Charles and Mary Lamb*, ed. by E. V. Lucas (7 vols. 1903); ed. by

W. Macldonald (7 vols. 1903). His *Letters* have been edited by W. Macldonald (1904) and A. Ainger (1904).

Lamb, MARY ANNE (1764-1847), writer for children, and sister of Charles Lamb, was born in the Temple. Like her brother, she came to her own slowly. Mary Lamb was forty-two before, in 1806, she began the *Tales from Shakespeare*, her first book. After 1800 she lived with her brother, and shared his intellectual life until his death in 1834—a companionship broken only by almost annually recurring attacks of insanity of some weeks' duration. Of the twenty *Tales from Shakespeare* Mary wrote fourteen, the comedies and *Pericles*; her brother, the six tragedies. The charm of these tales has carried them into numberless editions. *Mrs. Leicester's School*, to which Charles contributed only three stories ('Maria Howe,' 'Arabella Hardy,' and 'Susan Yates'), followed in 1809, a little work of rare and delicate charm, which contains Mary Lamb's prose masterpiece, 'The Young Mahometan.' This book also is still steadily reprinted. The same year saw the publication of *Poetry for Children*, two tiny volumes of simple verses drawn from everyday incidents by Mary Lamb and her brother. With these three books Mary Lamb's career as an author began and ended; but in 1815 she contributed an essay on 'Needle-work' to the *British Lady's Magazine*, and in her brother's *Works* (1818) are several beautiful and striking little poems from her pen.

The principal authorities for information concerning Mary Lamb are Mrs. Gilchrist's *Mary Lamb* (Eminent Women Series, 1883), and W. C. Hazlitt's *Mary and Charles Lamb* (1874), and *The Lambs: their Lives, their Friends.....* (1897).

Lamballe, MARIE THÉRÈSE LOUISE, PRINCESSE DE (1749-92), born at Turin; was a famous beauty, the friend of Marie Antoinette, and head of that queen's household. She voluntarily returned from England to share her mistress's imprisonment, and, refusing to renounce her allegiance to the queen, was killed by the Paris mob. See Bertin's *Madeleine de la Lamballe* (ed. 1894).

Lambayeque. (1.) Maritime dep. of N.W. Peru, divided into three provinces—Lambayeque, Chiclayo, and Pecasmayo; produces sugar, rice, tobacco, and cotton. Area, 4,614 sq. m. Pop. 120,000. Its cap. is Chiclayo, with a population of 10,000. (2.) Town, in dep. of same name, 6 m. from mouth of Lambayeque R., exports cotton and woollen goods and soap. Pop. 6,000.

Lambert, JOHANN HEINRICH (1728-77), German philosopher and mathematician, born at Mühlhausen; devoted himself to varied scientific studies, and published his *Photometria*, an important work dealing with the measurement of light (1760). Besides numerous mathematical and philosophical treatises, he wrote *Nuova Organon* (1764), and *Anlage zur Architektonik* (1771). See Lepsius's *Johann Heinrich Lambert* (1881).

Lambert, JOHN (1619-83), British soldier, was born at Calton, near Malham Tarn, Yorkshire. On the outbreak of the civil war he threw in his lot with Cromwell, led the parliamentary right wing at Marston Moor, became major-general of the north (1647), fought at Preston and Dunbar, and shared in the victory of Worcester. Having crushed Booth's royalist rising (1659), he was for a time paramount as chief of the 'Committee of Safety.' After the restoration he was arrested, and was banished to Guernsey. See Life in Whitaker's

Hist. of Craven, ed. by Morant (1878).

Lambeasa, or **LAMBESE**, tn. of Algeria, 65 m. s.s.w. of Constantine, 5 m. s.e. of Batna, occupies the site of Lambesis, the ancient military capital of Numidia. The remains of the Roman town are among the most interesting ruins in Northern Africa. Pop. about 1,800 (Europeans 500). See Sir L. Playfair's *Travels in the Footsteps of Bruce* (1877); and A. Graham's *Roman Africa* (1902).

Lambeth, metropolitan bor., London, on the Thames, opposite Westminster. Lambeth Palace, the residence of the archbishops of Canterbury, was founded in the 12th century; but the present buildings belong to the 13th century and later periods. Area, 4,194 ac. Pop. (1911) 298,126. See Tanswell's *Hist. and Antiquities of Lambeth* (1858); Cave-Browne's *Lambeth Palace and its Associations* (1882); Pim's *The Builders of Lambeth Palace* (1898).

Lambeth Conferences. The wide and rapid growth of the Anglican communion throughout the British colonies and America (see Canon Tucker's *English Church in Other Lands*, 1886) during the 19th century made some kind of a general synod an imperative necessity. The first conference, held in 1867, was attended by 76 bishops, while the fourth (1897) was attended by 194. At the first the Colenso case formed the principal subject for discussion, while the third (1888) was of special interest as considering the position of Christian communities which do not possess the historic episcopate. The famous 'Lambeth Quadrilateral' was then formulated as a basis for home reunion—i.e. the Holy Scriptures, the Apostles' and Nicene creeds, the two sacraments ordained by Christ himself, and the historic episcopate.

See Davidson's *The Lambeth Conferences of 1867, 1878, 1888* (1896); *Conference of Bishops of the Anglican Communion, Encyc. Letter* (1897).

Lambezellec, a N. suburb of Brest, France. Pop. 20,000.

Lambton, SIR HEDWORTH (1856), admiral, naval A.D.C. to the King, is the third son of the 2nd Earl of Durham. He entered the navy in 1870, was present at the bombardment of Alexandria (1882), and took part in the battle of Tell-el-Kebir (1882). From 1894 to 1897 he acted as private secretary first to Earl Spencer and afterwards to Lord Goschen as First Lords of the Admiralty. During the Boer war he commanded the Naval Brigade in the defence of Ladysmith. In 1901 he was appointed commander of the royal yacht *Victoria and Albert*, second in command of the Channel fleet early in 1903, and, in October 1904, rear-admiral for the cruiser division of the Mediterranean fleet. He was knighted in 1908, and has been in command of the China station since that date. He became a full admiral in 1911.

Lamego, tn., Beira prov., Vizeu dist., Portugal, 42 m. E. of Oporto; is the seat of an Episcopal bishop. Has extensive vineyards. Pop. 9,500.

Lamellibranchiata, a name given to bivalve molluscs on account of the structure of the gills, which form flat, membranous plates or lamellae. See BIVALVES, and MOLLUSCA.

Lamellicornia, or **LAMELLICORN BEETLES**, a tribe of beetles in which the antennæ have their terminal joints leaflike, and capable of separation and apposition—a character by means of which the insects are very readily recognized. The tarsus in Lamellicorn beetles has always five joints. The series includes three families—(1) the Passalidae, which are N. American beetles, quite

absent from Europe; (2) the Lucanidæ, or stag-beetles, which are very widely distributed; and (3) the Scarabeidæ, or chafers, a very large family, including some 13,000 species, many of which are very handsome. In all cases the larve live on decaying vegetable matter, roots, or dung, and are large, clumsy grubs, with curved bodies adapted for an underground or concealed mode of life. For details, see ROSECHAFER, STAG-BEETLE, etc.

Lameness may result from disease or injury of bones, joints, ligaments, muscles, or nerves, but usually more than one tissue element is concerned.

Of bones and joints, the chief injuries which produce lameness are fractures and dislocations. As a consequence of such a disease as tubercle, a joint may become disorganized and useless. Some rheumatic and rheumatoid affections, especially in old people, are progressive, and cripple the patient permanently. Apart from paralysis, many nervous diseases, such as locomotor ataxia, produce a characteristic abnormal gait; while hysteria and other neuroses must be kept in mind as possible causes of lameness. In the treatment of lameness, the cause of the condition must first be ascertained, and, as far as possible, removed. Much may often be done to mitigate lameness by skilfully-contrived apparatus to counteract the existing defects.

Lamennais, FÉLICITÉ ROBERT DE (1782-1854), French abbé and philosopher, belonged to a very old family of the bourgeoisie at St. Malo. In 1815 he spent the 'Hundred Days' in England, where the Abbé Carron found work for him in London, and had immense influence over him. This influence he used to make Lamennais take orders. After the revolution of 1830 he assisted in founding *L'Avenir*, with its motto,

Dieu et Liberté; and when it was condemned by ecclesiastical authority, he went to Rome with its co-founders, Montalembert and Lacordaire, to plead the cause of liberty. The Pope declared against him; and while his two colleagues submitted, he resisted, and soon broke all connection with the church. His most remarkable production, the small but tremendous *Paroles d'un Croyant*, appeared in 1834, a masterpiece of religious fervour. For the rest of his life he belonged to the democratic party, and fiercely attacked the opinions of which he had been hitherto the champion. During the 1848 revolution he was elected a representative in the Assembly, and took his place on the extreme left. His *Œuvres Complètes* were published in 1836 and 1844, and were followed by his *Œuvres Posthumes* (1855-8), his *Correspondance* (1866), and his *Confidences* and *Correspondance Intime* (1886). See Sainte-Beuve's *Portraits Contemporains* (1846); Quérard's *Notice Bibliographique des Ouvrages de Lamennais* (1849); Blaize's *Essai Biographique sur Lamennais* (1858); Janet's *La Philosophie de Lamennais* (1890); Mercier's *Lamennais* (1894); and Boutard's *Lamennais, sa Vie et ses Doctrines* (1905).

Lamentations, THE BOOK OF, a short poetical book of the Old Testament, called in Heb. 'Ekkah (i.e. 'How'), from its first word, and consisting of elegies expressive of the sufferings of the people of Jerusalem during and after the siege (587 B.C.). In the English Bible, as in the Septuagint, it follows Jeremiah, in accordance with the tradition that it was written by that prophet; in the Hebrew canon it forms one of the five Megilloth, or 'Rolls.' The tradition which attributes the booklet to Jeremiah is of long standing; and, indeed, the Septuagint ver-

sion opens with a verse (not in the Hebrew) expressly affirming his authorship. Yet the artificiality of construction consorts but ill with what we know of Jeremiah's disposition and circumstances; and as striking linguistic parallels can be traced with Ezeekiel, Deutero-Isaiah, and Job, and the unity of the book is doubtful, the critics have reversed the judgment of tradition, placing its date about half a century after the destruction of Jerusalem. See Driver's *Introduction* (6th ed.), and commentaries by Ewald, Oettli, Reuss, Löhr, Budde, Cheyne (*Pulpit Com.*), Streane (*Cambridge Bible*), and Adeney (*Expos. Bible*).

La Mesa, tn., Colombia, 25 m. w. of Bogotá; centre of trade in cacao, salt, and grain. Pop. 11,000.

Lamesley, par. and vil., England, in Durham co., 3 m. s. of Gateshead, has coal and iron mines. Pop. 5,500.

La Mettrie, JULIEN OFFROY (1709-51), French philosopher, born at St. Malo. After studying for the church, he adopted medicine as a profession, and served for some time in the army; but on publishing two strong works on materialism, he had to leave France and take refuge in Berlin under the protection of Frederick the Great. The Prussian king wrote his memoir, and prefixed it to an edition of his protégé's *Works* (1774). See Lange's *Geschichte des Materialismus* (new ed. 1887), and *Life*, in German, by Poritzky (1900).

Lamia, cap. nomarchy Phthiotis, Greece, 28 m. s.e. of Pharsalos, on the side of a hill, near the head of the Gulf of Lamia; contains remains of the ancient city from which the Lamic war took its name. Camels are reared. Pop. 7,500.

Lamia, a female phantom, or ogress, in ancient Greek legend, said to have been a Libyan queen,

whom Zeus loved. Hera, from jealousy, deprived her of her children; and Lamia, in revenge, seized other people's children, and murdered them. In later writers Lamiae are represented as ogresses who took a beautiful form, and enticed young men into their embraces in order to feed on their flesh and blood. They survive to this day in Greek peasant lore. See Diodorus; Plutarch, *De Curiosis*; Philostratus; Apuleius; Keats's *Lamia*; J. C. Lawson's *Modern Greek Folklore and Ancient Greek Religion* (1910); and G. F. Abbott's *Macdonian Folklore* (1903).

Lamia, L. AELIUS (d. 33 A.D.), a friend of Horace, who dedicated to him one of his odes, i. 26. He was consul in 3 A.D., and prefect of the city in 32. See A. W. Verrall's *Studies in Horace* (1884).

Laminarieæ, a group of Algae belonging to the *Phaeosporeæ*, a subdivision of the *Phaeophyceæ*, or brown seaweeds. The propagative cells are always swarm-spores of similar form and size; and these are produced in unicellular sporangia. The thallus has a stalk, often of considerable thickness, which is attached below to rocks or other substratum by means of rootlike growths, and ends above in a flat lamina.

Lamination. Beds of clay and of shale are often composed of thin layers parallel to the bedding planes, and in shales these layers or laminae separate readily when exposed to the weather. Probably they represent successive thin sheets of deposit laid down one after another on the bottom of still waters; they may, however, to some extent be due to the action of the pressure of superincumbent accumulations after deposit. See *CLEAVAGE*.

Lamium. See *LABIATE*.

Lammas Day is the A.S. *hlaf-mæsse*—“loaf mass,” August 1, when a loaf was offered as first

fruits; it is now a quarter day in Scotland. Old Lammas Day is August 12.

Lammas Lands are lands in England in which rights of common exist from old Lammas day (August 12) till March 25 (Lady day) in every year. For the rest of the year they are in private ownership.

Lämmmergeier (*Gypaëtus barbatus*), a large and handsome bird of prey, formerly distributed throughout the mountainous regions of S. Europe, and extending to the Himalaya and N. China. The lämmergeier differs from the vultures in the fact that the head is fully feathered; but it is regarded by many naturalists as akin to them, and the name 'bearded vulture,' derived from a tuft of feathers on the lower jaw, is often applied to it. It does not appear that the bird ever attacks man; it probably feeds entirely on carrion, although it is stated to carry off lambs, kids, and fowls occasionally.

Lammermoors, or **LAMMER-MUIR HILLS**, broad range of hills in the s. of Scotland, stretching E.N.E. in the shires of Berwick and Haddington, from the valley of the Gala to St. Abb's Head. Highest summits. 1,750 ft.

Lamont, JOHANN VON (1805-79), astronomer and magnetician, was born at Braemar, Aberdeenshire. Educated at a Scottish Benedictine monastery in Ratisbon, he entered the observatory of Bogenhausen near Munich in 1828, became its director in 1835, and established there in 1840 a magnetic observatory. His discovery of a decennial magnetic period was announced in September 1850; and the results of his magnetic surveys of Bavaria, France, Spain, North Germany, and Denmark were published in three separate works (1854-9). His chief astronomical labour was the preparation of eleven

catalogues (1866-74), founded on zone-observations of 34,674 stars. He was appointed in 1852 professor of astronomy in the University of Munich.

Lamoricière, LOUIS CHRISTOPHE LÉON JUCHAULT DE (1806-65), French general and politician, born at Nantes; fought through the Algerian wars (1833-47), taking a leading part in Abd-el-Kader's defeat. He directed the attack on the Paris barricades (1848), became war minister under Cavaignac (1848), and was exiled by Napoleon III. (1852). In 1860, during the Italian war of independence, Lamoricière led the papal troops. Permitted to return to France, he died at Prouzel, near Amiens. See Keller's *Le Général de Lamoricière* (new ed. 1901), Rastoul's *Le Général Lamoricière* (1894), and Flornoy's *Lamoricière* (1903).

La Motte, ANTOINE HOUDAR DE, generally known as La Motte-Houdar (1672-1731), French poet and playwright, born in Paris; was the author of *Inde de Castro* (1723), a tragedy; *Le Magnifique*, a comedy; and *L'Europe Galante* (1697), a ballet, all of which acquired considerable contemporary fame. Other works are a translation of the *Iliad* (1714); *Réflexions sur la Critique* (1715); *Fables* (1719); *Odes* (1707). His *Oeuvres* were published in 10 vols. (1754). See Jullien's *Les Paradoxes littéraires de La Motte* (1859), and P. Dupont's *Un Poète Philosophe* (1898).

La Motte Fouqué. See Fouqué.

Lamotte, JEANNE DE LUZ DE ST. REMY DE VALOIS, COMTESSE DE. See DIAMOND NECKLACE.

Lamoureux, CHARLES (1834-99), French violinist and conductor, born at Bordeaux. In 1881 he instituted the famous *Concerts Lamoureux*, and was the leader of the Wagnerian movement in France.

Lampblack is a finely divided soot formed by the incomplete combustion of carbon compounds. It consists chiefly of carbon with about 10 per cent. of complex hydrocarbons, and is mainly used in the preparation of printing ink.

Lampedusa (anc. *Lopadusza* or *Pelagia*), isl. in the Mediterranean, and belonging to the prov. of Girgenti, Italy; from which it is about 110 m. s.s.w. Area, 11½ sq. m. Produces fruit and grain. Pop. including the small isl. of Linosa, 2,300.

Lampertheim, tn., Germany in Hesse, 6 m. N. of Mannheim; manufactures tobacco and chemicals. Pop. (1910) 10,335.

Lampeter (Church of St. Peter), or **LAMPETER-PONT-STPHEN**, munic. bor. and markt. tn., Cardiganshire, Wales, on the Teifi, 23 m. N.N.E. of Carmarthen; contains St. David's College, founded in 1827, affiliated with the Universities of Oxford and Cambridge. Pop. (1911) 1,802.

Lampert and Holt Line (LIVERPOOL, BRAZIL, and RIVER PLATE STEAM NAVIGATION CO. LTD.) was founded in 1846 and converted in 1865 into the present company. They were the pioneers in the River Plate trade with sailing ships, and also the first company with a regular service of steamers to Brazil and River Plate ports. Frequent and regular services of combined passenger and cargo boats from Glasgow, Liverpool, Antwerp, and London, via Havre, Portugal, and Spain, to Brazil, River Plate, and West Coast ports; from Brazil to New Orleans and New York; New Orleans to Antwerp; New York to Manchester; River Plate to Antwerp and Liverpool; West Coast to Havre and Liverpool; also express passenger and mail services from Liverpool and New York to Brazil and River Plate and vice versa, with provision

for conveying chilled and frozen meat, and cool chambers for fruit. Fleet 46 steamers, aggregating 309,382 tons. Head office, Water Street, Liverpool; London office, 36 Lime Street, E.C.

Lamprey, an animal which, though often regarded as a fish, differs from a fish in the absence of paired fins and scales, in the rounded suctorial mouth without supporting jaws, in the presence of gill-pockets in place of the gills of fish, as well as in numerous internal peculiarities. In consequence, the lamprey and the related hag are placed in a distinct class known as cyclostomes, or round mouths. Three species occur in British waters, all belonging to the genus *Petromyzon* ('stone-sucker'). One of these, *P. marinus*, lives in the sea, and exceeds three feet in length; while the other two are fresh-water forms, and are much smaller. To these two species, *P. fluvialis* and *P. planeri*, the name lampern is often applied. In all cases the body is elongated and eel-like, its most conspicuous feature being the seven slits on either side of the neck which communicate with the gill-pockets. The mouth resembles that of the hag in the presence of a muscular rasp known as the tongue. The food consists of all sorts of small animals, as well as of the dead bodies of larger ones, and even of the flesh and blood of living creatures, to which the lampreys attach themselves after the fashion of the hag. They also attach themselves by their mouths to stones, whence the generic name.

Lamprophyres are a group of igneous rocks which are usually found filling dykes, and are characterized by their dark colour and the abundance of crystals of biotite and hornblende. They do not typically contain porphyritic crystals of felspar, and this is

one of the features which distinguish them from the porphyrites.

Lamps, from the point of view of this article, will be taken as including the more or less portable and self-contained devices in use at the present day for producing light, and to a less extent heat, by combustion; thus excluding electric lamps (see ELECTRIC LAMPS) and burners in which coal gas is consumed.

Wick Lamps.—Whilst formerly lamps of this type were almost invariably fed by oils of animal or vegetable origin, such oils have been largely supplanted by mineral oils, derived from petroleum or shale. Lamps for this type of oil should be so constructed as not to be fragile, not to allow the oil in the container to become heated, to go out, and not allow the oil to escape when upset, and to be extinguishable without blowing. They are used with closely-woven wicks that are either flat or tube-shaped, often two and sometimes three of the former being used side by side, whilst the latter may be built up of a series of small round wicks arranged in a circle, or by a bent-up flat wick. As paraffin or kerosene oils require to be burned with a good supply of air in order to give as white a light as possible and prevent smoking, a draught is usually provided by a glass funnel or chimney of more or less cylindrical shape, and is guided by a dome over the wick-holders so as to blow in a current parallel to and round the flame from its base. In order to avoid the necessity for a chimney, with its fragility and constant need of attention to keep it clean, lamps such as the Hitchcock have been devised, in which the draught is provided by a fan driven by clock-work in the base of the lamp. With the circular wick lamp the air-draught is introduced on Ar-

gand's principle both to the inside and outside of the flame, which is also made more effective by being spread out into the shape of an inverted cone by fixing a circular disc of metal of about the diameter of the wick a short distance above the base of the flame. Large sizes of both circular and flat wick lamps are also used for heating as well as for lighting.

Spray and Vapour Lamps.—In the Lucigen type of lamp, used by contractors for temporary night-work out of doors, the crude shale or creosote oil used is held in a strong iron cylinder. Air is forced into the space above the oil by a hand pump to a pressure of about 25 lbs. per sq. in., thus driving the oil up a pipe that extends from the bottom of the tank to the burner. Here it passes through tubes heated, when the burner is in action, by the flame itself, or when starting by burning some oily waste round them, so that it escapes from the jet partly as spray and partly as vapour, and burns with a rough and roaring but brilliant flame. The lamps used by plumbers and painters are on a very similar plan, but the oil, either paraffin or benzoline, is completely vaporized, and the jet of vapour mixed with air, so that it burns with a non-luminous flame like that of a blow-pipe. Vapour lamps for indoor lighting may be divided into two classes—viz. those that owe their light to the finely divided carbon particles set free by the decomposition of the hydrocarbon in the flame, and those in which the flame is on the bunsen principle, and consequently non-luminous, but which heats up a mantle of refractory oxides to incandescence. Examples of the former type are given in the benzoline lamp, in which the vapour from a volatile petroleum spirit issues from small holes in the burner, and is ignited; and in the

naphtha lamp used on street stalls and the like, in which a somewhat less volatile spirit is led from a tank by a pipe to a perforated burner at a lower level. The most successful vapour lamps in which a mantle is used are those fed either with alcohol or light petroleum spirit. In the alcohol lamps, of which the 'Sol' is a good type, the spirit flows from a reservoir through a tube, which, when the lamp is in action, is heated by the flame itself, but on starting requires to be warmed up by an auxiliary flame. Similar lamps are constructed to be used with gasoline.

The petrol lamp on the 'Notkin' principle requires a very volatile petroleum spirit of sp. gr. not exceeding $\frac{7}{8}$, with the advantage that the spirit does not require to be vaporized by heating, being sufficiently volatile of itself. In the original type of this lamp the petrol is soaked into a porous block of kieselguhr and plaster of Paris contained in a metal case. The heavy vapour given off from the petrol flows, along with some air, down a pipe fitted to the lower part of the case to the jet of a bunsen burner, where it mixes with more air, and is burned in a mantle. In later forms of the lamp the reservoir is placed below, the draught of the chimney surrounding the mantle, first started by a match, and afterwards kept up by the flame itself, being sufficient to draw the combustible mixture into the special form of bunsen burner used. This type of lamp has the disadvantage that such spirit as is suitable, besides being very inflammable, is also expensive. Many lamps using ordinary paraffin oil vapour to ignite a mantle have been devised, though without perfect success.

The only lamps coming within

the definition that consume what may be strictly called gas are those burning acetylene, as, although this gas is usually supplied from a central installation of greater or less size, it can also be prepared in a generator contained in a portable lamp, and is much used in this way to produce the brilliant light used on bicycles, motors, optical lanterns, fishing operations, etc.

For these purposes the calcium carbide is usually contained in a gas-tight receptacle, to which water is added drop by drop from a finely adjustable needle or other valve—a process which, though less satisfactory than the method of adding the carbide to water, serves well enough for intermittent use. The gas is filtered and consumed at a special form of steatite burner which is so constructed as to cause two fine jets of the gas, issuing from fine holes some distance apart, to impinge on each other and form a flat flame in a plane at right angles to their direction.

For lamps used in fiery mines, flour mills, petrol stores (Regulations under 59 and 60 Vict. c. 36, s. 5, 1896), and such places where the atmosphere may become explosive from admixture with inflammable gas or vapours, see SAFETY LAMP.

Lighthouse lamps are of the circular wick type, usually with three or more concentric wicks. They burn paraffin or petroleum oil of high specific gravity and flash point (125° F. for petroleum, and 140° F. for paraffin).

Candle lamps are much used for carriage lamps, reading lamps, and decorative purposes. They simply consist of a case containing a spring by which a hard candle is forced up to a perforated cap through which the wick passes.

Lampasæus, now LAPSAKI, important city of ancient Phrygia, Asia Minor, on the s. coast of

the Hellespont. See Murray's *Handbook for Asia Minor* (1895), and Wilson's *Asia Minor*.

Lamp-shell. See BRACHIOPODA.

Lampyris. See GLOW-WORM.

Lamu, isl. off the coast of, and included in, British E. Africa, about $2\frac{1}{2}$ ° s., separated from the mainland by a narrow channel, and from Manda I., to the E., by a channel somewhat broader and deeper; 6*m.* long by 3*m.* broad. The town and port of Lamu, on the eastern shore, opposite Manda Island, is the capital of Tanaland prov. Pop. about 15,000.

Lanaria, a genus of the order Hämodoraceæ, containing only one species. *L. plumosa* is a South African herbaceous, perennial plant growing to about a foot in height, bearing white, feathery flowers, with a six-partite perianth.

Lanark, co. tu., par., and rov. bor., S. Lanarkshire, Scotland, on the high ground half a mile above the r. bk. of the Clyde, and close to the famous falls, 22*m.* s.e. of Glasgow. The district is rich in Wallace associations. Manufactures drugget and wincey, and has large cattle and sheep market. The racecourse is about 1*m.* e.s.e. of the town. Pop. (1911) 5,900. At NEW LANARK, 1*m.* s.w. of Lanark, in 1785, David Dale and Arkwright founded a cotton mill of which Robert Owen, the social reformer, was long manager. Pop. 800.

Lanarkshire, inland co. of S.W. Scotland, having Dunbarton, Stirling, and Linlithgow shires on the N., Edinburgh and Peebles on the E., Dumfries on the S., and Ayr and Renfrew on the W. Area, 879 sq. m. In population it ranks first among Scottish counties, having in 1911 a population of 1,447,113, an increase of 1,020,141 over that of 1841. It is drained by the Clyde

and its tributaries the Douglas, the Nethan, the Avon, the Calder, and the Kelvin, and is sometimes called Clydesdale, but this name is properly applied to the central valley. The county is divided into three wards—Upper, Middle, and Lower. Tinto (2,335 ft.) and Green Lowther (2,403 ft.) are the highest hills. The county is celebrated for its breed of heavy working horses (Clydesdales). The central valley has long been renowned for its orchards. Strawberries, currants, gooseberries, and tomatoes are produced on the 'braes.' The Lower Ward is the busiest and most populous; it contains the chief seats of the cotton, linen, and woollen industries; the coal and ironstone mines, fireclay beds, blast furnaces, rolling mills, shale mines, and oil works. The N. part of the shire is of Carboniferous age, and its sandstone and limestone quarries, its shale, coal, and blackband ironstone mines and fireclay beds, make it the richest mineral field in Scotland. The principal manufacturing towns are Glasgow, Govan, Partick, Coatbridge, Airdrie, Hamilton, Motherwell, Wishaw, and Rutherglen; coal and fireclay are worked round Shettleston, Baillieston, Airdrie, and Coatbridge. The county is divided into six parliamentary divisions—Govan, Partick, N.W., N.E., Mid. and S. Glasgow was, in 1893, made a county of a city, and is also a royal burgh; Lanark and Rutherglen are the other royal burghs. Lanark is the county town. Historically interesting are the castles of Craignethan, Bothwell, Douglas, and Dalziel; and the battlefields of Langside, Drumclog, and Bothwell Brig. See Leslie's *Scotia Descriptio* (1578); Irving's *Upper Ward of Lanarkshire* (1864); Maidment's *Topographical Collections* in the Mitchell Library, Glasgow;

Lancashire

Cochran-Patrick's *Early Records Relating to Mining in Scotland* (1878); and *Extracts from the Records of the Burgh of Lanark* (1893).

Lancashire, large maritime county palatine, in the west of England, lying chiefly between the Mersey and Morecambe Bay, with a detached portion (Furness) N.W. of the latter, between Cumberland and Westmorland. This N. section resembles in physical character the adjacent counties, and forms part of the Lake district. Off the s.w. extremity is Walney Isle. The surface of the detached portion is mountainous. In the main body, the E., bordering on Yorkshire, is hilly, with wide moorland tracts; the centre is undulating; and the w. is generally low. The principal rivers are Duddon (N.W. border), Crake, Leven, Douglas, Lune, Wyre, Ribble, and Mersey, with Irwell. In the N.W. are Windermere (part), Coniston, and Esthwaite lakes. The county is traversed by a network of railways, and the Manchester Ship Canal, opened 1894, enables ocean vessels to ascend to Manchester. The principal crops are oats, wheat, and potatoes; cattle and sheep are reared, and there are many dairy farms. The county contains valuable deposits of coal and iron; the latter, a rich hematite, being worked in the Furness district. The chief coal fields are S. Lancashire and Burnley, with an output in 1909 of 23,705,983 tons, while the production of pig-iron exceeded 650,000 tons. Other minerals are salt (rock and brine), limestone, and sandstone, the mines and quarries together giving employment to over 100,000 persons. Lancashire is the principal seat of the cotton manufacture (Manchester the centre in the world, over 400,000 persons being employed in this industry); other industries include worsted,

200 Lancashire & Yorkshire Ry.

woollen, silk, flax, hemp, and jute manufacture. The county is divided into six hundreds, and returns twenty-three members to Parliament.

Lancashire was constituted a palatinate by Edward III. (1363), and for a long time it enjoyed almost sovereign privileges. During the civil war it was the scene of various military events, and in 1745 the young Pretender marched southward through it. Besides Roman remains, there are ancient castles (Lancaster, Clitheroe), halls (Hulme, Speke), and abbeys (Furness, Whalley). Area, 1,887 sq. m. Pop. (1911) 4,825,739. See Baines's *Lancashire and Cheshire* (1868-9); Croston's *Historic Sites* (1883); Fishwick's *Hist. of Lancashire* (1894); Mortimer's *Industrial Lancashire* (1897); Harrison's *Archæological Survey* (1896); *Transactions of Lancashire Antiquarian Society, and of Lancashire and Cheshire Historic Society*.

Lancashire and Yorkshire Railway. This railway was incorporated in 1847, being an amalgamation of the Manchester and Leeds (1836) and other railways, and twelve years later the East Lancashire Railway was also amalgamated. The mileage either wholly or partly owned by the company at December 31, 1910, was 5984, the chief lines extending from Manchester to Liverpool, Southport, and Blackpool on the west, and to Doncaster and Goole on the east, and as far north as Hellifield. The company serves a thickly populated manufacturing district, and during the year ending December 31, 1910, carried over 65 million passengers. The line between Liverpool, Southport, and Crossens is worked as an electric railway, as are also certain other sections in the vicinity of Liverpool. The company owns a fleet of steamers sailing regularly

between Liverpool and Drogheda on the west coast, and between Goole and Hull and Amsterdam, Antwerp, Bruges, Copenhagen, Delfzijl, Dunkirk, Ghent, Hamburg and Rotterdam on the east coast. They are also joint owners with the London and North Western Railway Company of the steamers sailing from Fleetwood to Belfast and Londonderry. The dividend on the company's ordinary stock for the year 1910 was at the rate of 4 $\frac{1}{2}$ per cent. The paid up capital on June 30, 1910 amounted to £62,658,182. The gross receipts for the year 1910, were £6,077,932, and the expenditure £3,638,962. The rolling stock (including duplicates) consists of 1,527 locomotives, 4,812 passenger vehicles, and 33,808 goods, etc., vehicles.

Lancaster. (1.) Municipal bor. and port, Lancashire, England, 21 m. N. by w. of Preston. Manufactures linoleum and railway plant. Pop. (1911) 41,414. See Fleurys *Time-Honoured Lancaster* (1891), and Roper's *Guide to Lancaster* (1900). (2.) City of Pennsylvania, U.S.A., cap. Lancaster co., on the Conestoga R., 70 m. w. of Philadelphia. It stands in a rich agricultural district, and much wheat and tobacco are grown. The manufactures include umbrellas and canes, tobacco, cigars and cigarettes, silk and cotton goods, and confectionery. Pop. (1910) 47,227. (3.) City, Fairfield co., Ohio, U.S.A., 30 m. s.e. of Columbus, on Hocking R. The district is richly agricultural, and is in the natural-gas belt. Manufactures agricultural implements, flour, shoes, and glass. Pop. (1910) 13,093.

Lancaster, DUCHY OF AND House of. Henry III.'s second son, Edmund, was the founder of the house of Lancaster. His son, Earl Thomas, took a leading part with the barons in checking

the misgovernment of Edward II., and after beheading Gaveston and banishing the Despensers, was himself executed at Boroughbridge (1322). His nephew's second daughter and co-heiress, Blanche, married her cousin, John of Gaunt, fourth son of Edward III., in 1359, when the king formed Lancaster into a county palatine. The duchy was far more extensive than the county palatine, and had estates belonging to it in many other counties. The duchy of Lancaster is now annexed to the crown, and the chancellorship of the duchy is a political appointment, and usually held by a cabinet minister.

Lancaster, SIR JAMES (d. 1618), navigator, sailed with an unsuccessful expedition to the E. Indies (1591). In 1596 he captured Pernambuco in Brazil; and in 1601 gave the new East India Company its first footing at Acheen and Java. He was knighted by Elizabeth, and having suggested the North-West Passage, Lancaster Sound was named by Baffin in his honour. See *Voyages of Sir James Lancaster*, edited for the Hakluyt Society by Sir Clements R. Markham (1877).

Lancaster, a British armoured cruiser, of 9,800 tons and 23 knots, launched at Newcastle (1902). The ship-name was introduced in the first year of the 18th century, and has since been associated with the relief of Denia (1808), Byng's action off Minorca (1756), the capture of the *Comte de Gramont* (1757), the battle of Camperdown (1797), and the operations in the river Plate (1807).

Lancaster Sound, channel, Arctic regions, connecting Baffin Bay and Barrow Strait; was discovered by Baffin (1616) and traversed by Parry (1819).

Lancelet. See AMPHIOXUS.

Lancelot du Lac, the son of King Ban of Benoye, a knight of the Round Table and lover of

Queen Guinevere. Though probably better known to modern readers than any other hero of the cycle, Lancelot belongs exclusively to the later stage of Arthurian romantic evolution. Lancelot became, by the daughter of King Pelles, the father of Galahad. For the prose *Lancelot*, see editions by Jehan le Bourgois and Jehan Dupré (1488), Ant. Verard (1494), Philippe Lenoire (1513, 1533), Jehan Petit (1533). *Roman van Lancelet*, ed. Jonckbloet (2 vols. 1850), Dutch verse translation of the latter part of the prose *Lancelot*; *Lanzelot*, by Ulrich von Zatzikhoven, ed. Hahn (1845); *The Legend of Sir Lancelot du Lac*, by J. L. Weston, in Grimm Library, vol. xii.

Lancers, cavalry regiments carrying light lances, introduced into European warfare by Napoleon, and adopted by Britain about 1815. The lance is borne by foreign regiments not so named—e.g. dragoons and uhlans. The British regiments of lancers are the Royal Irish, Queen's Royal, Prince of Wales's Royal, Queen's, Duke of Cambridge's Own, and Empress of India's. There are two forms of lances used in the British army, with staves of ash and bamboo respectively. In the German and other continental armies lances with staves of tubular steel are largely employed.

Lancet, THE, one of the leading British medical journals, was founded in 1823 by Thomas Wakley, surgeon, who, with fierce and indomitable zeal, set himself to attack the grosser abuses of practice and administration in connection with the hospitals. Wakley was assisted in the early days of the *Lancet* by William Cobbett, James Wardrop, and Sir William Lawrence, and later by Dr. Arthur Hill Hassall. The *Lancet* commissioners inquired into the state of workhouse infirmaries in London (1865) and in

the country (1867). The paper is at present edited by Samuel Squire Sprigge, M.D.

Lancewood is the wood of certain trees belonging to the genus *Guatteria*, a subdivision of the order Anonaceæ. The so-called white lancewood is the product of *G. laurifolia*, but the bulk of the lancewood used by coachbuilders for shafts of traps consists of the main stems of the W. Indian *G. virgata*. It is very tough and elastic.

Lan-chau-fu, cap. of prov. of Kan-su, China, on r. bk. of Yellow R. Manufactures cloth and camel's-hair goods. Trade in silk, fur, metal, and wooden articles, grain and tea. Pop. about 100,000, chiefly Mohammedans. See Rockhill's *Land of the Lamas* (1891).

Lanchester, par. and vil., England, co. of and 8 m. N.W. of Durham; has coal mines. Pop. 4,600. In the vicinity are remains of a large Roman station.

Lanciani, COMMENDATORE RODOLFO AMADEO (1847), Italian archæologist, born at Rome. He became secretary to the Roman Archæological Commission (1872), director of excavations (1878), and professor of ancient topography, University of Rome (since 1878). He has superintended all recent Roman researches of importance. His great work, *Forma Urbis Romæ*, a plan of classic Rome in 46 plates, with historical text, was begun in 1892. Among his other publications are *Topografia di Roma Antica* (1880); *L'Itinerario di Einsiedeln* (1891); *The Destruction of Ancient Rome* (Eng. trans. 1899); *Pagan and Christian Rome* (Eng. trans. 1892); *Storia degli Scavi di Roma* (1903); *Golden Days of the Renaissance in Rome* (Eng. trans. 1906); and *Wanderings in the Roman Campagna* (1909).

Lanciano (anc. *Anaxenusa* or *Anaxanum*), tn., Chieti prov.,

Abruzzi e Molise, Italy, 15 m. s.e. of Chieti; the seat of an archbishop. Produces grain, fruit, and oil, and has silk, linen, and hemp factories. Pop. of comm. 18,500.

Land. Economists have generally employed the term land in a technical sense, differing more or less from the ordinary usage. They have, on the one hand, extended the meaning to include all the resources which nature offers to man. Thus land includes the mines as well as the soil, the fisheries and the navigable rivers, the water power and the trade situation, as well as the natural properties of the soil. On the other hand, they have limited the term to the original and indestructible qualities of the soil, and with this usage we now deal.

Land as a factor in production is subject to a peculiar law which has been of enormous importance in determining the course of human development. This is the law of diminishing returns, which enunciates the fact that land will not go on indefinitely yielding returns to human labour. This law is not peculiar to agriculture, but the condition that makes the law specially important for agricultural industry is that the quantity of land available is at any given time limited. When the extension of a given factory becomes unprofitable, a new factory can be built which will be at least as good as the original; but in agriculture good land is strictly limited, and recourse must be had to inferior land if it is desired to continue producing.

Agriculture, which we take as typical of the various extractive industries connected with land, is also peculiar in this respect as an industry, that the advantages of large-scale production over small-scale production are by no means proved beyond doubt.

Small farming would undoubtedly give the largest gross return, but at a disproportionate cost of labour; though, when the difficulties of providing suitable occupation for the hours in which the peasant proprietor is uneconomically engaged in cultivation are considered, it is possibly true that from the national point of view small ownership gives the best net returns.

The historical problems regarding the origin of property in land are discussed under the head VILLAGE COMMUNITY, and regarding the beginnings of land tenure in England under MANOR and FEUDALISM. The great epochs in English land history are the two agrarian revolutions which occurred in the 15th-16th century and in the 18th-19th century. The first was due to the prosperity of the woollen industry, which induced the more enlightened to convert arable into pasture land, and to enclose great areas because of the greater clips of wool to be obtained from sheep fed in enclosed fields. This was the beginning of English capitalist tenant farming. Mercantilism as a national policy in the 17th and 18th centuries, in consequence of an export duty on corn, diverted agriculture from its exclusive attention to wool; but this did not affect land tenure to any great extent. The next agrarian revolution was also a period of enclosures, and it proved ruinous to small farmers, whose rights to commons were not always fully respected. The result was an enormous increase of produce from the land, due to improvements which became possible after enclosure. This revolution finally gave the character to English land-owning and farming. England is the classical home of the large farm and of the capitalist farmer. See SMALL HOLDINGS ACTS.

Land legislation as applicable to England and to the fertile parts of Scotland has differed in character from that passed for the benefit of Ireland. See IRISH LAND LEGISLATION; also Garnier's *History of the English Landed Interest* (1892-3), Jebb's *Small Holdings of England* (1909), Shaw Lefevre's *Agrarian Tenures* (1893), and Walker's *Land and its Rent* (1903).

Land, PURCHASE AND HIRE OF, FOR MILITARY PURPOSES. It may be necessary, for various military purposes, to acquire land or buildings permanently or to hire them temporarily. In case of an invasion or for purposes of defence, the Defence Act of 1842 empowers the Secretary of State for War to take possession of any lands or buildings required, simply by issuing an order to that effect, which is carried out after due notice to the owners. In ordinary times, lands or buildings required are usually purchased or hired by agreement between the War Office and the owners; but should agreement be found impossible, the Secretary of State, acting under the provisions of the Military Lands Acts of 1892 and 1900, may issue a 'provisional order' declaring his intention of compulsorily acquiring the land, and hold an inquiry, meanwhile submitting a bill to Parliament. If the bill passes into an act, the owner is compelled to give up the property on reasonable terms; but otherwise, if Parliament throws out the bill, the 'provisional order' is annulled. The act of 1892 also empowers public bodies to lease land to a secretary of state for any term not exceeding twenty-one years. Amendments of 1897 and 1900 provide for compensation for injury to private rights.

Landau, tn., Bavaria, Germany, in the prov. palatine, 32 m. by rail s.w. of Mannheim. Has

breweries, tanneries, and dyeing industries, and trades in tobacco, wine, and grain. The town is supposed to have given its name to the four-wheeled carriage known as a 'landau,' but this derivation is doubtful. Pop. (1910) 17,761.

Landaur, cantonment and sanatorium, Dehra Dun dist., United Provinces, India, 77 m. E. of Ambala, and 7,459 ft. above sea-level. Pop. 4,000.

Land Commissioners. These consisted of Copyhold, Tithe, and Inclosure Commissioners, who were given the title of Land Commissioners by the Settled Land Act, 1882. Their powers and duties under eighty-four different acts were transferred to the Board of Agriculture in 1889.

Land Crab, a member of the family Gecarcinidae, remarkable for the curious modification of the carapace in the region of the gills, which enables it to lead a terrestrial existence. The land crab occurs in the warmer regions of both hemispheres, but the best known form is *Gecarcinus ruricola* of Jamaica and the West Indian islands generally, whose habits, and especially the very curious migrations to the sea at the breeding period, have been described by Patrick Browne in *The Civil and Natural History of Jamaica* (1756).

Landeck, tn., Silesia, Prussia, on river Biele, 54 m. s. of Breslau, and close to the Austrian frontier; has warm sulphur springs and mud baths; gloves are manufactured. Pop. (1910) 3,337.

Landed Estates Court, a court constituted in Ireland by the Sale and Transfer of Land (Ireland) Act, 1858, s. 2, to which was transferred all the business of the Commissioners for the Sale of Incumbered Estates in Ireland. The court was merged in the Supreme Court by the Supreme Court of Judicature (Ireland) Act, 1877, and the judges of the

Landed Estates Court became the land judges of the Supreme Court.

Landells, EBENEZER (1808-60), English engraver, born at Newcastle-on-Tyne; studied there under Bewick; settled in London in 1829, where he became originator and part proprietor of *Punch* (1841). See Spielmann's *Hist. of Punch* (1895).

Lander, RICHARD LEMON (1804-34), English explorer, born at Truro; accompanied Claperton's Niger expedition (1825), and on his return wrote accounts of it in his *Journal of Richard Lander from Kano to the Coast* (1829), and *Records of Captain Claperton's Last Expedition to Africa* (1830). In 1830 Lander and his brother John (1807-39) were sent by the government to explore the lower course of the Niger. During a later expedition to the Niger, Lander was killed by the natives. See his *Journal of an Expedition to Explore the Niger* (1832).

Landerneau, seapt., prov. Finistère, France, on river Elorn, 12 m. E.N.E. of Brest; has shipbuilding, tanning, woollen, linen, candles, paper. Pop. of comm. 22,700.

Landes, maritime dep., S.W. France, bordering on the Atlantic. It is divided into two parts by the Adour, the only river of importance in the department. The portion to the N., three-fifths of the department, is known as the *landes*, and consists of tracts of sand, interspersed with marshes, and forests of cork, pine, and oak. The part to the S., known as Chalosse, is hilly, and covered in large part by vineyards and plantations of oak. Mining is extensively carried on, iron ore being the principal source of wealth. Rock salt is obtained at Dax and Lescourre, and at the former are noted mineral springs. Area, 3,615 sq. m. Pop. 294,000. There

are three arrondissements—Mont-de-Marsan (cap.), St. Sever, and Dax.

Landeshut, tn., Prussia, in Silesia, 46 m. s.w. of Breslau. The chief manufactures are flax, linen, and woollen goods, shoes, and beer. Pop. (1910) 13,573.

Landgrave, or COUNT, was originally an official sent out by the central authority to administer a country district or *gau*. He acted as military leader, also as judge. After the break-up of the Carlovingian empire the counts became more and more independent, and eventually adopted the title of landgrave, or *comes terra*. The position of a landgrave was originally similar to that of a duke in Britain.

Landi, GASPARDO (1756-1830), Italian painter, born at Piacenza; studied in Rome under Corvi and Batoni; was elected member of the Academy of St. Luke, of which he was president (1817-30). Landi's best works are the *Assumption* and the *Coronation of the Virgin*, in Piacenza Cathedral. As a portrait painter he achieved considerable success.

Land Laws. There can be no land laws until there is permanent use and occupation of the same land, and that does not take place till what has been called 'intensive agriculture' has been discovered.

According to the fully-developed modern notion of property, the owner of land has the right to do with it anything that is not forbidden. He has the right of possession, and the right of user, and the right to sell it, let it, lend it, burden it, give it away, and, in England at any rate, to transmit it to others at his death. In all countries where the feudal system has prevailed no subject is theoretically the absolute owner of land, because the rule or fiction of law, commonly called the doctrine of tenures, vests the abso-

lute property, or *dominium directum*, of all lands in the crown, and makes all land of inheritance in the hands of a subject to be held of some superior and under some real or supposed services and conditions annexed thereto by a supposed original grant. But the doctrine of tenures has now little effect on the enjoyment of property, and the owner in fee simple of freehold land in England is for all practical purposes an absolute owner.

The two great divisions of the law with regard to land are concerned with enjoyment and transfer. As to the enjoyment of land, an owner in fee simple has the right of possession, and may use his land for any purpose so long as he does not interfere with the rights of others or create a nuisance. His rights extend up to the heavens and down to the centre of the earth, and he is therefore entitled to exclude every one else from coming on the surface of the land, or from boring under it, or even from passing through the air above it. (See *TRESPASS*.)

An owner is entitled to all that grows on the land either naturally or as the result of cultivation. He may erect buildings on the surface of the land to any height, and he may excavate it to any depth, subject to the obligation to give support to the adjacent land. He may extract minerals, or other things of value, and dispose of them for his own benefit, with the following exceptions: gold and silver mines and treasure trove belong to the crown. But the owner of the land may work mines of copper, tin, iron, or lead, even although gold or silver may be contained in the ore. In such cases, when the ore has been raised to the banks of the mine the crown may within thirty days take the ore upon paying the mineowner for the

copper, tin, iron, or lead contained in it. Water on the surface of land—as, for example, a lake—belongs to the owner of the land; but in the case of water passing over land in a definite channel, such as a river or stream, his rights are restricted by the rights of those on to whose land the water flows, and he must not exhaust or pollute it so as to injure them. The owner of land may collect and take water which percolates through it and does not form part of a definite stream.

The owner of land may, of course, cultivate it himself, or he may let it to another at a rent. It is a matter of national interest that the land should be well cultivated, and, for this object, that the actual cultivator should have security of tenure, and full compensation for improvements; and that the rights reserved by the landlord, such as sporting rights, should not interfere with the proper cultivation of the land. To some extent these objects are sought to be attained in England and Scotland by the Agricultural Holdings Acts and the Ground Game Act (see *GAME LAWS*), and in Ireland by much of the recent land legislation. (See *IRELAND—History*, and *IRISH LAND LEGISLATION*.)

The formation of a class of small owners is thought by many to be a desirable object, and the legislature has endeavoured comparatively recently to give facilities for the attainment of this end (see *SMALL HOLDINGS ACTS*); but the general existence of farm buildings suitable for large farms, and other circumstances which will be referred to, form serious obstacles to the natural growth of a class of this kind.

As to an owner's power of disposition, he may confer upon others rights of a limited kind with regard to his land. He may license another to pass over

his land, or to enter it in pursuit of game; or he may contract with another to use the land as a cricket ground or a racecourse, or to let boats for hire upon a lake. In none of these cases is any right of property transferred. On the other hand, he may grant the right to take some profit out of the land, as to cut turf, fell timber, or dig for gravel or clay; or he may grant positive or negative rights as appurtenant to adjoining property, such as a right-of-way or the right not to have the light of a building obstructed. (See EASEMENT and SERVITUDE.) All such rights conferred upon others limit the owner's use of his land. Again, he may settle his land, which means that he may grant estates less than his own, such as a life estate, followed, it may be, by an estate tail, so as to give to a series of limited owners successive interests in the income and corpus of the property. But, in England at any rate, an owner's power of creating successive interests in land is limited by what is called the rule against perpetuities, which makes any disposition void which is not so framed that it must necessarily take effect, if at all, within twenty-one years of the death of some person living at the date of the settlement, if it is made by deed, or at the date of the testator's death, if it is made by will. The object of the rule against perpetuities is to prevent the dead hand from resting too long on the land and unduly fettering its free user and disposition. To some extent, however, the policy of the rule is defeated by the system of strict settlements, by which land is tied up from generation to generation by a series of re-settlements, so that the person entitled to possession is always a limited owner, entitled only to the income of the property.

An owner may also burden his land by mortgaging or charging it as a special security for debt. The mortgaging of land, in so far as it is against public policy, is closely allied to the evils connected with settlements, under which the land is often heavily charged with jointures and portions for younger children.

An owner may also dispose of his land absolutely by sale or gift during his life, or may devise it by will at his death. In England, however, the power of sale, gift, or devise is limited as regards its objects by the Statutes of Mortmain.

If an owner does not dispose of his land in his lifetime and dies intestate, the land descends to the heir at law (subject to claims for curtesy, dower, and terce—as to which see HUSBAND AND WIFE). Males of equal degree of relationship succeed before females; and among males in the same degree, by the law of primogeniture, the eldest is the sole heir, to the exclusion of the others, and takes the whole of the land. Females in the same degree take as co-heiresses—in England called coparceners, and in Scotland heirs-portioners.

The right of the state to take land compulsorily for public purposes is unquestionable, and many private acts of Parliament are passed every session authorizing the compulsory purchase of land for railways, street improvements, and a number of other objects. Full compensation to the owners has always to be paid, and is assessed in proceedings under the Lands Clauses Acts.

The fact that land is limited in amount and necessary for all has led to different proposals for expropriating the present proprietors and vesting the whole of the land in the state. It is said that the land belongs to the nation, and ought not to form the subject

of private property, but that the state should be the universal landlord. Nationalization of the land, as it is called, of course forms one of the objects of a consistent system of socialism, which aims at transferring to the state the control of all the means of production; but it has also been advocated by persons who are not socialists, but would permit private property in capital of other kinds. They say that land is in a different position from other kinds of property—that it is not produced by industry but provided by nature; that its value is increased by the increase of population or the aggregation of population in particular areas, and that all the increase in value goes to owners who have done nothing to bring it about. Various suggestions have been made for redressing this alleged injustice, from the extreme view that all existing owners should be expropriated without compensation to proposals for taxing or rating future increments of value in particular cases. Some effect has been given to this latter proposal by the increment tax imposed by the Finance (1909-10) Act, 1910. (See **UNEARNED INCREMENT** and **LAND VALUES**.)

We are not concerned here with a general scheme of socialism; and short of such a scheme it is clear that, if the present proprietors are to be bought out, either the present value of the land must be paid to them or the expropriation will amount to confiscation.

In the case of agricultural land a purchase at the present value would in all probability be a bad bargain for the state. The attraction of possessing landed property makes the price obtainable in the market high, often fully thirty years' purchase; and after that had been paid the state would still be burdened with considerable recurring expendi-

ture upon roads, fences, etc. In the case of urban property there is often a large rise in value owing to the increase of population and the expenditure of the rates, and it has been proposed to give municipal authorities the right to purchase compulsorily the land in the neighbourhood of towns, so as to obtain for the public this increase of value.

The taxation or rating of land values is another scheme which has been advocated in recent years, notably by the London County Council and the Corporation of Glasgow. The proposal is to value the land in towns separately from the buildings upon it, and impose a separate rate upon the land or site value, the increase of which is said to be in the nature of unearned increment. The question is too complicated to discuss in the space available, and those interested are referred to Mr. Sargent's book on *Urban Rating*, Professor Smart's *Taxation of Land Values* (1900), and the *Reports* (with evidence and appendices) of the Royal Commission on Local Taxation (1899-1902).

When local improvements are carried out in large towns—such, for example, as the construction of new streets through hitherto overcrowded areas—the property of particular owners is often benefited specially and out of proportion to the general benefit arising from the improvement. This special benefit, under the name of 'betterment,' is separately assessed and rated in American cities, and the principle has been introduced into this country in the case of some of the London improvements recently authorized by Parliament.

The transfer or conveyance of land in modern times is practically always carried out by means of deeds; and as in England these are purely private docu-

ments, it is necessary for a purchaser to have an investigation made of the history of the dealings with the land in order to make sure that he gets a good title. In the case of small pieces of land the expense of this is out of proportion to the purchase price, and is a serious burden on the buyer, and an obstacle to free dealing in land. The investigation is much easier in Scotland, where a very complete system of public registration of deeds has long been in force. It was long felt, however, by persons not hampered by professional prejudice, that something more than this was wanted, and that it would greatly simplify all transactions relating to land if the title could be examined once for all, and registered as an absolute title, so that all future dealings with the land could be effected by entries in a public register. After several unsuccessful attempts, and much opposition, principally from the legal profession, a system of compulsory registration of title has been partially introduced in England by the Land Transfer Act, 1897. See Maine's *Village Communities* (1876); Seeholm's *The English Village Community* (3rd ed. 1884); Jenks's *Law and Politics in the Middle Ages* (1898); Pollock and Maitland's *History of English Law before the Time of Edicard I.* (2nd ed. 1898); Brodrick's *English Land and English Landlords* (1881); Shaw Lefevre's *Agrarian Tenures* (1893); Cobden Club Essays, *Systems of Land Tenure* (new ed. 1881); Boyd Kinneir's *Principles of Property in Land* (1880); Pollock's *The Land Laws* (3rd ed. 1896); Wallace's *Land Nationalization* (3rd ed. 1893; new ed. 1882); Henry George's *Progress and Poverty* (new ed. 1884); Williams's *Law of Real Property* (20th ed. 1906); Challis's *Law of Real Property* (2nd ed. 1892).

Land League. THE, established in October 1879, and suppressed in 1881 by Mr. Gladstone's government, was perhaps the most powerful of the many organizations to which agrarian agitation in Ireland has given birth. The principles of the organization were set forth in the following resolutions:—(1) 'That the objects of the league are, first, to bring about a reduction of rack-rents; second, to facilitate the obtaining of the ownership of the soil by the occupiers of the soil.' (2) 'That the objects of the league can be best obtained (a) by promoting organization among the tenant farmers; (b) by defending those who may be threatened with eviction for refusing to pay unjust rents; (c) by facilitating the working of the "Bright clauses" of the Land Act [1870] during the winter; and (d) by obtaining such reform in the laws relating to land as will enable every tenant to become the owner of his holding by paying a fair rent for a limited number of years.' Among the names prominently associated with the Land League were those of Charles S. Parnell, Michael Davitt (the real founder), John Dillon, Thomas Sexton, J. G. Biggar, James O'Kelly, and Patrick Egan. Under the Coercion Act of 1881, Parnell and other officials were arrested and confined in Kilmainham prison, and the league was proclaimed as an unlawful association.

Landlord and Tenant. This relation is generally created by a lease, or an agreement for a lease, which must usually be in writing. (See FRAUDS, STATUTE OF.) An agreement may be converted into a lease by an action for specific performance. A lease must begin at a certain date, and be either for a term of years or for lives. Leases contain covenants by the lessee, which vary in form, and should be carefully

looked at, as they are sometimes oppressive. The ordinary covenants are :—(1.) To pay rent. Sometimes an increased rent is required if a certain act—e.g. ploughing up pasture—is committed. (2.) To pay rates and taxes. The landlord in all cases pays property tax and tithe rent charge; and he pays land tax, sewers rates, and special local assessments, unless this clause is inserted. The tenant, unless he has covenanted to pay landlord's taxes, may, and generally must, deduct them from his rent. (3.) To repair. This covenant admits of great variation; often the landlord does external and the tenant internal repairs. The covenant may be to put in repair, or to keep in good and tenantable repair; and often it is more specific, as, to paint at certain times and seasons. If there is a covenant to repair *simpliciter*, without other provision, the tenant is liable to rebuild if the property is burnt down. (4.) To insure. The insurance must often be taken out in the landlord's name at a particular office. But a landlord who insures himself is not, in the absence of express provision, bound to rebuild if the premises are burnt down. (5.) Not to assign or underlet without the landlord's consent. This covenant is often very troublesome, and the tenant should insist that it should be provided that the consent should not be unreasonably withheld. A person cannot let his house even for a week in the London season under this clause without consent. But the landlord may not exact a fine for giving his consent. (6.) Not to carry on a trade, or to carry on a trade. In assignments, etc., especially of long terms, such covenants are often lost sight of, and should be inquired after, as they may be found very inconvenient. The

covenant is often 'not to put up a brass plate.' (7.) Covenant against waste. (See WASTE.) The following covenants are implied: (1.) In an agricultural lease, that the lessee will work in a husband-like manner. (2.) In the case of a furnished house only, that the house is fit for habitation. The lessor covenants that he has a right to convey, will give quiet enjoyment, free from encumbrances, and that he will make any further assurance that may be necessary. A lease also contains conditions, which are distinguished from covenants in that a breach of the former makes the lease void, while a breach of the latter is only a ground for an action for damages. The Conveyancing and Law of Property Act, 1881, has restrained the harsh operation of conditions by giving the lessee an opportunity of rectifying any breaches before incurring a forfeiture. A tenant may still forfeit his lease by a disclaimer—i.e. by denying his landlord's title, and either claiming title himself or setting up the right of a third person. Mining leases contain many special covenants for securing the proper working of the mine and the protection of the surface. Leases are often the subject of assignment or underlease. An assignment conveys to the assignee the whole of the lessee's rights and liabilities; though, speaking generally, an assignee can only be required to perform those covenants which run with the land—i.e. covenants which benefit the estate, such as to repair, to insure, or not to carry on a trade. An underlease, however, creates no relationship between the original lessor and the underlessee; and the lessee, though he may have parted with his whole interest except the last day of the lease, remains liable on his covenants.

In the case of tenancies where the term is not ascertained in the instrument creating the tenancy, a tenant is entitled to a reasonable notice to quit. If the tenancy is by the month or week, a month's or a week's notice is enough; if the tenancy is yearly, six months' notice must be given, such notice expiring at the end of the year. A half-year is 182 days; but if the tenancy is according to quarter day, the half-year is so reckoned.

In Scotland, as leases are only contracts, they were formerly not good against successors of the grantor by purchase or adjudication; but by an act of 1449 a tenant in possession was protected. To obtain the benefit of the act, the lease, if for more than a year, must be in writing, for a definite period, at a specified rent, though not necessarily a money rent, and possession must follow. The common period of an agricultural lease is nineteen years, but there is frequently a right to either party to determine the tenancy upon giving three years' notice. Trustees and limited owners have been given powers of leasing by many acts of Parliament. A tenant is entitled to the use and possession of the subject let, and to an abatement of the rent if part of the subject is destroyed or rendered unfit for use; he is not entitled, without consent, to change the use of the subject from that for which it was let. Except under the Agricultural Holdings Acts, all improvements made without express stipulation are made at the tenant's risk. A tenant is liable for taxes and public burdens, except probably in the case of a furnished house. The heirs and executors of a landlord and tenant are respectively liable for all unfulfilled obligations under the lease. Leaseholders are not liable to the

widow's right of terce. See IRISH LAND LEGISLATION, AGRICULTURAL HOLDINGS ACT, DISTRESS, HOUSING OF THE WORKING CLASSES, and FIXTURES; also Woodfall's *Landlord and Tenant* (18th ed. 1908).

Landnáma-Bók, an Icelandic Domesday-Book, or chronicle, in five parts, treating of the discovery and settlement of the island, of its several quarters, and of the families by which each quarter was settled. It was compiled by Ari Fróthi, the son of Thorgil, who died about 1150, and published at Copenhagen in 1900; also edited in Vigfusson and York Powell's *Origines Islandicae* (1905).

Landon, CHARLES PAUL (1760-1826), French painter and writer on art, was born at Nouant (dep. Orne). After visiting Rome (1792), he became (1816) custodian of paintings in the Paris museum. His chief works were *Annales du Musée et de l'École Moderne des Beaux-Arts* (ed. 1824-35, 25 vols.); *Salons de 1808-24* (13 vols.); *Galerie Historique des Hommes les plus Célèbres* (ed. 1811, 13 vols.); *Choix de Tableaux et de Statues des plus Célèbres Musées et Cabinets Etrangers* (12 vols. 1821, etc.).

Landon, LETITIA ELIZABETH (1802-38), English poetess, born at Chelsea, early contributed to the *Literary Gazette* and other journals. Her poetry, somewhat Byronic, written under the initials 'L. E. L.', is often pleasing; and her novels showed great promise. See *Life and Literary Remains*, by S. L. Blanchard (1841); and *Poetical Works*, edited by W. B. Scott (1873).

Landor, WALTER SAVAGE (1775-1864), English poet and prose writer, born at Warwick, was educated at Knowle and Rugby, whence a fault of discipline led to his removal. After a period with a tutor at Ashbourne, Derbyshire, he entered

Trinity College, Oxford (1793). Landor lived a wandering and unsettled life for some years, mainly at Bath, Bristol, or in Wales, with a visit to Paris in 1802. The chief literary event of this period of his career was the publication of *Gebir* in 1798. In 1805 he inherited some property from his father, and began to live expensively at Bath. In 1808 he joined Blake's expedition to assist the Spanish rising against the French. This ended in the Convention of Cintra, which Landor denounced. In 1809 he bought Llanthony Abbey, Monmouthshire, and in 1811 married Julis Thuillier, the daughter of a Swiss banker. But he quarrelled with his neighbours, and got into fresh debt over the improvement of his estate, which was finally taken over by his mother, who made him an allowance of £500 a year. Then came a quarrel with his wife, after which Landor moved his establishment to Italy, where he reigned for several years. His residence, first at Como, then at Pisa, Pistoja, and Florence, was chequered by disputes with the local authorities; but he struck in his *Imaginary Conversations* upon a fertile literary vein of dialogue-essay, which yielded many volumes. In 1832 he visited England, and in 1835, after a fresh quarrel with his wife, left Italy alone. He again settled at Bath, and continued to write both in verse and in prose, paying occasional visits to London, where he had a close ally in 'the most gorgeous Lady Blessington.' About 1857 his brain began to fail him. His quarrels became pitiful, and, after an attack of unconsciousness in 1858, he returned once more to Italy. In 1869 he retired to Florence, and for some years before his death was much of a recluse. With many faults of temper and of character, Landor was capable of generosity and of dis-

tinguished courtesy. His republicanism was that of an aristocratic pagan, and inspired the rhythms of a finished and often magnificent prose. Poems: *Miscellaneous Poems* (1795, 1800, 1802, 1831); *Gebir* (1798); *Simonides* (1806); *Count Julian* (1812); *Hellenics* (1847); *Italics* (1848); *Collected Poems*, ed. Crump (1892). Prose Works: *Imaginary Conversations*, vols. i., ii. (1824); vol. iii. (1828); vol. iv., v. (1829); *Citation and Examination of William Shakespeare* (1834); *Pericles and Aspasia* (1836); *The Pentameron* (1837); *The Last Fruit of an Old Tree* (1853); *Imaginary Conversations of Greeks and Romans* (1853); *Dry Sticks Fagoted* (1858); *Collected Works* (1864), ed. Forster (1876), ed. Ellis (1886-90), ed. Crump (1890-2). See *Life*, by Forster (1869); *Landor*, by Colvin, in *English Men of Letters* (1884); *Letters and Unpublished Writings*, by Wheeler (1897); *Letters, Public and Private*, by Wheeler (1899); *Walter Savage Landor*, by Evans (1892).

Land Rail. See CORNCRAKE.

Land Registry. See REGISTRATION OF TITLE.

Landsberg, or L. AN DER WARTHE, tn., prov. Brandenburg, Prussia, on the Warthe, 45 m. N.E. of Frankfort-on-the-Oder; has manufactures of machinery, saw-milling, and brick-making. Pop. (1910) 39,332.

Landsberg, tn., Bavaria, Germany, on Lech R., 38 m. w. by s. of Munich; has a fine mediæval town hall and a fine gateway, the Bayer-Tor. Pop. (1910) 7,283.

Landscape, from the scientific standpoint, is the complex of the phenomena seen from any place. Eliminating atmospheric or marine effects, the various landscapes are controlled by the composition and structure of the rocks (soluble, porous, impervious, homogeneous, layered, hori-

zontal, twisted, vertical), by the agents wearing them away or forming them (running water, sea, ice, wind), and by their covering of plant and animal life. See GEOMORPHOLOGY, GEOGRAPHICAL DISTRIBUTION OF PLANTS.

Landscape-gardening. Gardening on an artistic scale was practised by the Assyrians, the Greeks and Romans, and throughout Europe during the middle ages, yet the birth of landscape-gardening proper may be ascribed to Italy in the 15th century; and the most characteristic example now existing is the Boboli garden at Florence, laid out by Cosmo de' Medici. Following this come the splendid gardens of the Quirinal Palace, the Vatican, the Villa Borghese, the Villa Pamphilj-Doria, the Villa Ludovici, the Villa Medici, the Villa Albani, and the Villa d'Este, Tivoli, with the more modern public garden on the Pincian Hill. France next showed its interest in landscape-gardening in the gardens laid out by François I. at Fontainebleau, after his return from Italy. This was subsequently altered beyond recognition by Henry IV., Louis XIV., and Napoleon. St. Germain was the next attempt in France, with a landscape garden originally designed for Henry IV., and altered for Louis XIV. and Louis XV. Then followed the Jardin des Tuilleries; but all the French gardens were soon eclipsed by those of Versailles, where Louis XIV. commanded Le Nôtre to create for him 'a wonder of art such as the world had never seen.' This led to the designer's employment by William and Mary to emulate Versailles on a smaller scale at Hampton Court, St. James's, and Kensington Gardens. About this time the landscaped-garden hobby reached England; and William Kent, a landscape

painter, who, like Le Nôtre, had been educated in Rome, was employed to plan the parks of Richmond, Esher, Claremont, Stowe, and Rowtham; while his able follower, 'Capability Brown,' remodelled Blenheim, the greatest of all landscape gardens, and designed Longleat and Wilton. Since those days England has shown the lead in the matter of landscape-gardening, and nothing finer has been produced than the gardens of Chatsworth and Trentham. The best practical and historical works on the subject are those of Loudon (1822), Repton (1840), F. R. Elliott (1878), and H. E. Milner (1880).

Lands Clauses Acts. Many Acts of Parliament, both public and private, authorize the taking of land, either compulsorily or by agreement, for the purposes of the undertaking to which they relate. Formerly it was necessary to insert in each special act provisions regulating and facilitating the acquisition of the land required, for the ascertainment and payment of the compensation due to the owners of it, and for other matters connected with the purchase. These provisions have been consolidated in the Lands Clauses Acts, which are now incorporated by reference, either wholly or partly, in all special acts which authorize the taking of land. The special acts are thus simplified and shortened. The principal acts are the Lands Clauses Consolidated Act, 1845, which applies to England and Ireland, and the Lands Clauses Consolidated (Scotland) Act, 1845; but there are amending acts of 1860 (extending to Scotland), 1869, 1883, and 1895. In Ireland the Railway Clauses Acts of 1851, 1860, 1864, and 1868 also amend the Lands Clauses Acts as regards Ireland. See Browne's *Law of Compensation* (2nd ed. 1903).

Landseer, SIR EDWIN HENRY (1802-73), representative member of the English school of animal painting, came of a family of artists, his father being John Landseer the engraver, of whose other sons Thomas (1796-1880) and Charles (1799-1879) were respectively a celebrated engraver and an R.A. Landseer was trained by his father as well as in the Academy schools; he exhibited in the Royal Academy (1815), was elected associate (1826), and became full member (1830). He was the friend of Sydney Smith, Dickens, and other celebrities, and attained high favour at court. Queen Victoria and the Prince Consort made etchings from his designs, and a knighthood was conferred on him (1850). The famous bronze lions which he designed for Trafalgar Square were erected in 1869. His chief pictures (which have been reproduced by various methods) are in the London, Edinburgh, and Tate galleries, in the South Kensington Museum, and at Windsor and Buckingham Palace. See Wornum's *Epochs of Painting*, Ruskin's *Modern Painters* (1843-60), Stephens's *Sir Edwin H. Landseer* (1880), and Chesneau's *The English School of Painting* (1885).

Land's End (Ptolemy's *Bolterium*), most w. point of England, in Cornwall, 9 m. s.w. of Penzance, facing the Atlantic Ocean. It ends in granite cliffs, from 60 to 100 ft. high, fantastically carved by erosion. On Carn Bras, one of the rocky islets to the N.w., is Longships Lighthouse, erected in 1793.

Landsgemeinden, the legislative assemblies in certain parts of Switzerland, in which every properly qualified male voter appears in person, and not by representation. The term is also used of village or valley assemblies of similar nature. This institution

still survives in Uri, both divisions of Unterwalden and of Appenzell, and in Glarus, but in 1848 was abolished in Schwyz and Zug. The meetings take place in the open, on the last Sunday of April or the first Sunday of May each year. Historically these assemblies (the earliest known is that of Schwyz in 1294) met to regulate matters relating to the lands owned in common; but later their powers became extended to purely political matters. See Blumer's *Staats- und Rechtsgeschichte der Schweizerischen Demokratie* (1850), Von Wyss's *Abhandlungen zur Geschichte des Schweizer Öffentlichen Rechts*, Freeman's *Growth of the English Constitution* (1872), and Rambert's *Etudes Historiques et Nationales* (1889).

Landshut, tn., Bavaria, Germany, prov. Lower Bavaria, on the Isar, 38 m. N.E. of Munich. Here is the remarkable old castle of Trausnitz (1232), the former seat of the dukes of Lower Bavaria. Industries: machinery, hats, breweries, and tobacco. Pop. (1910) 25,150.

Landsknechte, erroneously LANZKNECHTE, German mercenary soldiers of the 15th and 16th centuries, were first raised (1487) by the Emperor Maximilian I. They won their greatest fame in the Italian wars of the first half of the 16th century. Their ranks were largely recruited from the minor nobility. As a distinct organization they disappeared in the first years of the Thirty Years' war. See Weesely's *Die Landsknechte* (1877) and Blau's *Die Deutschen Landsknechte* (1882).

Landskron, tn., Bohemia, Austria, on the Moravian frontier, 36 m. n.w. of Olmütz. Pop. (1911) 6,842.

Landskrona, seapt. tn., co. Malmöhus, Sweden, on the Sound, the junction of many of

the Swedish railways, 22 m. N. of Malmö. It has iron foundries, saw and sugar mills, and factories for leather, tobacco, woollen wares, and smokeless powder. It exports butter, eggs, bacon, tiles, and machinery. Here, in 1677, Charles XI. defeated the Danes. On the island of Hven, opposite Landskrona, Tycho Brahe built his observatory of Uranienborg. Pop. (1911) 16,041.

Landslips. On sea-coasts, as the wash of the waves undermines the base of the cliffs, there are often great falls of rock. In the south of England, where cliffs of chalk and greensand rest on the lias clays, the water, sinking freely through the porous overlying strata, is stopped by the impervious clay beneath, and passes gradually down along its upper surface, appearing on the sea-shore as a line of springs. After heavy rains, the clay, being saturated, becomes plastic, and as the strata have all a gentle seaward inclination, the weight of the thick pile of greensand and chalk tends to set the mass in motion. The wet clay forms the slippery surface of an inclined plane, and a gradual displacement results, by which the face of the cliff slips forward and downward. This sunken mass is known as the undercliff, and is usually irregularly fractured during the process.

Landslips are characteristic of mountain regions in which the valleys are deep and steep-sided. In the Alps they are very frequent, especially in the more lofty central zone. They are most common in spring when the snow is melting, or in autumn after heavy rains, and are often set in motion by the action of springs saturating or even removing some of the strata, and in this way forming lines of weakness. See Bonney's *Story of Our Planet* (1908); Geikie's *Text-book of*

Geology (4th ed. 1903); Geikie's *Physical Geography* (1884); and Lord Avebury's *Scenery of Switzerland* (2nd ed. 1896).

Landsturm (lit. 'land-storm'), the name of one of the great subdivisions of the German army—a last line of military reserve, only called to arms during actual threat of invasion, and consisting of men who have passed through active, reserve, and Landwehr service, and who remain in the Landsturm till the age of forty-five, after which military obligation ceases. Up to 1860 it was constituted of all men capable of bearing arms between the ages of seventeen and sixty.

Land Taxes. The question of land taxes—i.e. of taxes on the value of sites as distinct from the buildings erected on them—has generally been discussed as one of local, as opposed to state, taxation, and as such it was specially considered by the Royal Commission on Local Taxation which sat from 1896 to 1902. The majority of the commissioners reported strongly against the proposal to have a separate valuation of, and tax on, site values. On the other hand, five of the commissioners expressed the opinion that site and structure ought to be separately valued.

An 'English League for the Taxation of Land Values' was formed in 1902, as successor to the 'Land Reform League,' founded in 1883, to advocate the taxation of land values 'with a view to the restoration of the land to the people.' A bill applicable to Scotland passed the second reading in March 1906, providing for the separate valuation of sites, and for the imposition of a special rate not exceeding 2s. per pound thereon.

As the result of the Finance (1909-10) Act, 1910, state land taxes have now been imposed.

Half the proceeds were originally to be paid over by the state to the various local authorities, but the Revenue Bill, 1911, has since provided that for the present the whole proceeds shall go to the state. The various duties are as follows:—

(1.) *Increment Value Duty* at the rate of £1 for every complete £5 of the amount by which the capital site value of land, on the occasion on which the duty becomes chargeable, exceeds its original site value as first ascertained under the general valuation of land now being carried out. The occasions on which this duty becomes payable are—(a) on sale, or lease for more than fourteen years; (b) on the death of the owner, etc.; and (c) every fifteenth year in the case of land held by a body corporate or incorporated so as not to be liable to death duties.

(2.) *Reversion Duty* at the rate of £1 for every complete £10 of the value of the benefit accruing to a lessor by the determination of his lease—i.e. of the difference between the value of the land on the grant and on the determination of the lease.

(3.) *Undeveloped Land Duty* at the rate of 1d. in the £1 per annum on the site value of land not developed by the erection of dwelling-houses, offices, factories, etc., or not otherwise used for business, trade, or industry.

(4.) *Mineral Rights Duty* at the rate of 1s. in the £1 per annum on the rental value of all rights to work minerals and of all mineral wayleaves, rental value being defined as the yearly rent actually paid, or, where the minerals are being worked by the proprietor, the sum which would have been paid as rent if the working had been leased. There are various specific exemptions from these duties. An initial general valuation of all

land in the United Kingdom is required by the Act, and there will be a revaluation of undeveloped land every five years for assessment of undeveloped land duty. See *Taxation of Land Values* by Moulton (1889), Graham (1900), and Cox (1905); also Fox's *Rating of Land Values* (1906), and Konstam's *Law of Land Values* (1910).

Lane Values, TAXATION OF.
See LAND TAXES.

Landwehr ('land defence'), a species of German and Austrian militia, or levy of persons otherwise civilian, only called out in time of necessity. A German's military service has four phases—active service, service in the reserves, in the Landwehr, and finally in the Landsturm, all of them compulsory. In Switzerland all citizens serve for twelve years in the Landwehr after passing twelve years in the regular army.

Lane, EDWARD WILLIAM (1801-76), one of the greatest English Arabic scholars, was born at Hereford. In 1825 he made the first of a series of visits to Egypt, and from that time the customs, lore, and literature of the country became his life study. In 1836 he published his well-known *Account of the Manners and Customs of the Modern Egyptians*, a work which, after more than half a century, remains a standard authority on the subject. His translation of the *Thousand and One Nights* (1838-40) was the first accurate version of the celebrated Arabic stories. His greatest work, the *Arabic-English Lexicon* (1863-92; posthumous parts edited by Stanley Lane-Poole), was the result of over twenty years' labour. It was immediately recognized throughout Europe as the first authority on Arabic. See *Life* by Stanley Lane-Poole (1877).

Lane, JONATHAN HOMER (1819-90), American physicist. Born at

Genesee, New York, he entered the employment of the United States Coast Survey (1847). He observed the total solar eclipses in Iowa (1869) and in Spain (1870); invented several ingenious instruments, and wrote numerous memoirs on scientific subjects, one of which, on the *Theoretical Temperature of the Sun* (1870), contained the result (known as 'Lane's law') that gases rise in temperature as they contract through cooling.

Lane, SIR RICHARD (1584-1650), lord keeper, born near Northampton, called to the bar, and was appointed deputy-receiver of Northampton (1615). Knighted in 1644, he became lord chief baron in the same year, and in 1645 was made lord keeper. He followed Charles II. into exile to St. Malo, and died in Jersey.

Lane, RICHARD JAMES (1800-72), engraver and lithographer, grandnephew of Gainsborough; became a skilful engraver, and was elected an A.R.A. (1827). Turning to lithography, he was soon at the head of that branch of art in England, and at the same time proved himself a sculptor and draughtsman of merit. His portraits of Queen Victoria, the Prince Consort, and other members of the royal family, are well known.

Lane-Poole, STANLEY (1854), historian and archaeologist, born in London, graduated at Oxford (1878). He early turned his attention to numismatics, and published a *Catalogue of Oriental and Indian Coins* for the British Museum (14 vols. 1875-92), *Social Life in Egypt* (1883), and *Art of the Saracens* (1886). He also edited E. W. Lane's *Arabic-English Lexicon* (1863-92), and *Coins and Medals* (1885). He has travelled much in pursuit of his special subjects, and among his numerous publications may be men-

tioned his *Life of Lord Stratford de Redcliffe* (1888), *Life of Sir Harry Parkes* (1894), *Moors in Spain* (1887), *Barbary Corsairs* (1890), *The Mohammedan Dynasties* (1893), *Egypt in the Middle Ages* (1901), *Mediaeval India* (1902), *Story of Cairo* (1902), and *The Thousand and One Nights* (1906). He was professor of Arabic at Trinity College, Dublin (1898-1904).

Lanercost, par., Eskdale div., Cumberland, England, on riv. Irthing, 11 m. N.E. of Carlisle. The parish contains the remains of an Augustinian priory founded in 1169, the nave and north aisle of which are still used as a church. The *Chronicle of Lanercost* (1201-1346), a valuable history of the Borders, was actually composed at Carlisle. It was edited by Father Stevenson for the Bannatyne and Maitland Clubs (1839). See Ferguson's *Lanercost* (1870). Pop. 1,000.

Lanessan, JEAN LOUIS DE (1843), French politician and political editor of the *Século*, born at St. André de Cubzac (dep. Gironde); became professor (1875) of natural history at Paris. Entering the Chamber (1881) as radical deputy for Paris, he was appointed (1891) governor-general of French Indo-China, but was recalled (1894). In 1899-1902 he was minister of the navy. He has written, amongst other works, *L'Expansion Coloniale de la France* (1886), *La Tunisie* (1887), *L'Indo-Chine Français* (1888), *Principes de Colonisation* (1896), *La République Démocratique* (1897), *La Lutte pour l'Existence et l'Évolution des Sociétés* (1903), *La Concurrence Sociale et les Devoirs Sociaux* (1904), *La Morale des Religions* (1905), *L'Etat et les Eglises en France depuis les Origines jusqu'à la Séparation* (1906), *L'Education de la Femme Moderne* (1907) and *La Morale Naturelle* (1908).

LANFRANC (1005-89), first archbishop of Canterbury after the Conquest, born at Pavia; began life as a jurist, teaching at Pavia, Bologna, and Avranches, where he founded the most popular law college in France. In 1042 he entered the monastery of Bec, near Rouen, and in 1045 became its prior. In 1066 he was appointed abbot of the new monastery of Caen, founded by William, Duke of Normandy. After the Norman conquest of England, Lanfranc was induced by William, though reluctantly, to accept the see of Canterbury, which he occupied with great spiritual benefit to the church until his death. He was the author of commentaries on Paul's epistles, a treatise *De Corpore et Sanguine Domini*, letters, and sermons. His complete works were published in Paris by D'Achéry (1648), and an excellent edition, edited by Giles, was issued at Oxford (1844). See *Life* by Crozals (1877).

LANFREY, PIERRE (1828-77), French historian and politician, born at Chambéry; wrote *L'Eglise et les Philosophes au XVIII. Siècle* (1855); *Essai sur la Révolution Française* (1858); *Histoire Politique des Papes* (1860), placed on the Index; but his chief work is *Histoire de Napoléon I.* (1867-75), in which he gives an unbiased picture of Bonaparte. His *Oeuvres Complètes* appeared 1879-85, and his *Correspondance* in 1888.

LANG, ANDREW (1844), Scottish man of letters, born at Selkirk; in 1863 entered Balliol College, Oxford. In 1868, having graduated with a classical first-class, he was elected a fellow of Merton College. He speedily took a position as a translator from the classics, a literary critic, a nimble writer of verse, an anthropologist, historian, and biographer. Mr. Lang collaborated

with Professor Butcher on an excellent version of the *Odyssey* (1879); translated Theocritus, Bion, and Moschus (1880), and, with Walter Leaf and Ernest Myers, bks. x.-xvi. of the *Iliad* (1883). His *Aucassin and Nicolette* (1887) and his *Perrault's Popular Tales* illustrate his French accomplishments. He published *The Library* (1881), *Books and Bookmen* (1886), *Lost Leaders and Letters on Literature* (1889), *Old Friends* (1890), *Homer and the Epic* (1893), *Adventures among Books* (1905), *The Puzzle of Dickens' Last Plot* (1905), *Homer and His Age* (1906), and *A Defence of Sir Walter Scott and the Border Minstrelsy* (1910). Mr. Lang's poetical work includes *Ballads and Lyrics of Old France* (1872), *Ballades in Blue China* (1880), *Helen of Troy* (1882), *Rhymes à la Mode* (1884), *Grass of Parnassus* (1888), and *New Collected Rhymes* (1905). His chief contributions to the study of anthropology and religion are *Custom and Myth* (1884), *Myth, Ritual, and Religion* (1887), *The Making of Religion* (1898), *Magic and Religion* (1901), *The Secret of the Totem* and *The Clyde Mystery* (1905). Allied to these are *Cock Lane and Common Sense* (1894), *The Book of Dreams and Ghosts* (1897), and *Modern Mythology* (1897). In comparative mythology Mr. Lang has done useful work. Besides writing on Oxford and St. Andrews, he has produced a *History of Scotland from the Roman Occupation* (vols. i.-iv., 1900-1907), *Historical Mysteries* (1904), *John Knox and the Reformation* (1905), and *Portraits and Jewels of Mary Stuart* (1906). His contributions to biography are *Lord Iddeleigh's Life, Letters, and Diaries* (1890), the *Life of John Gibson Lockhart* (1896), and *Sir George Mackenzie, King's Advocate* (1909). *Elucidations of the Jaco-*

bite episode are given in *Pickle the Spy* (1897), *The Highlands of Scotland in 1750*, *The Companions of Pickle* (1898), and *Prince Charles Edward* (1900). Mr. Lang's *Blue Fairy Book* (1889) began a series of charming fancies in different colours, diversified by *My Own Fairy Book* (1895), *Olive Fairy Book* (1907). His *Angling Sketches* appeared in 1891. He collaborated with Mr. Rider Haggard in *The World's Desire* (1898), and with Mr. A. E. W. Mason on *Parson Kelly* (1899). His *Monk of Fife* (1898) and *The Disentanglers* (1902) are his only works of fiction not written in collaboration. He edited the English Worthies Series, and editions of Scott, Burns, and Dickens. Mr. Lang has contributed several important articles to this encyclopaedia.

Lang, Cosmo GORDON (1864), archbishop of York, son of the late Dr. Marshall Lang, principal of Aberdeen University, was educated at Glasgow University and Balliol College, Oxford. He was a law student of the Inner Temple, London, for several years, but ultimately decided to take holy orders. Ordained deacon in 1890 and priest in 1891, he was curate of Leeds (1890-3), at the end of which period he returned to Oxford as fellow of Magdalen and dean of divinity. To these were added, in 1894, the incumbency of St. Mary's. His next charge was the extensive urban parish of Portsea, to which Lord Salisbury appointed him in 1896. Here his work favourably impressed Queen Victoria, who made him her chaplain when he had been but nine years in holy orders. In 1901 he became bishop suffragan of Stepney and a canon of St. Paul's. While in East London he did splendid work for the Church of England Men's Society. In 1908 Mr. Asquith nominated him to the archbishopric of York,

vacant by the resignation of Dr. MacLagan. Dr. Lang's writings include: *The Miracles of Jesus, as Marks of the Way of Life* (1900); *The Parables of Jesus* (1906); and *The Opportunity of the Church of England* (1906).

Langaran, pueblo, on N. coast of Misamis prov., Mindanao I., Philippines, 17 m. E. of Dapitan. Pop. 11,500.

Langdale, Henry BICKERSTETH, BARON (1783-1851), master of the rolls, born at Kirkby Lonsdale, was called to the bar (1811), and practised in Chancery. As master of the rolls (1836) he was distinguished as the 'father of record reform.' See Hardy's *Memories of Lord Langdale* (1852).

Lange, Friedrich Albert (1828-75), German philosopher and politician, born at Wald, near Solingen. His chief works are the *Geschichte des Materialismus* (1866), and *Die Arbeiterfrage* (1865), a plea for the labouring classes.

Lange, Johann Peter (1802-84), Biblical exegete, was born at Bier, near Elberfeld; studied at Bonn; was pastor successively at Wald, Langenberg, and Duisburg, and professor of theology at Zürich (1841) and Bonn (1854). The best known among his works, which display an ingenious and exuberant fancy rather than deep insight, are *Das Leben Jesu* (1844-47; Eng. trans. 1864), *Christliche Dogmatik* (1849-52), *Geschichte des apostolischen Zeitalters* (1853-54), and his once-popular *Theologisch-homiletische Bibelwerk*, in 22 vols. (1857), which contains commentaries on all the books of the Bible, and was translated, under the supervision of Professor Philip Schaff, as *Theological and Homiletical Commentary on the Old Testament and the New Testament* (14 vols. and 10 vols. respectively). See Lichtenberger's *Histoire des Idées Religieuses en*

Allemagne (1873; Eng. trans. 1889).

Langebek, JACOB (1710-75), Danish historian, early devoted to historical studies, won the favour of the famous scholar Gram by his translations of the Icelandic *Kristnisaga*, and for thirteen years was employed by him as an amanuensis in the royal library. In 1745 he founded a new Danish historical society, and succeeded Gram as record-keeper in 1748. His greatest achievement was the collection of mediæval documents entitled *Scriptores rerum Daniarum*, of which he completed three volumes.

Langeland, Danish isl., about 33 m. long and 3 m. in breadth, lying between the Great Belt, the Baltic, and the Little Belt. Rudkjöbing, on the west coast, is the principal town. Pop. (1911) 20,335.

Langen, tn., Germany, in Hesse, 8 m. N. of Darmstadt. Pop. (1910) 7,162.

Langenberg, tn., Rhenish Prussia, 1 m. S.E. of Mülheim; has textile industries. Pop. (1910) 9,544.

Langenbielau, tn., prov. of Silesia, Prussia, 32 m. S.S.W. of Breslau, stretches 4½ m. from Reichenbach into the Eulengebirge. Manufactures woollens, cottons, chemicals, sugar, and beer, and has dyeworks and sawmills. Pop. (1910) 18,864.

Langendijk, PIETER (1683-1756), Dutch dramatist and poet, born at Haarlem; was the author of *Don Quichot op de Brulost van Kamacho* (1712), and of some descriptive poems. His complete works were published at Haarlem (1721-60). See Meijer's (1891) and Mehler's (1892) *Pieter Langendijk*.

Langendreer, comm., prov. of Westphalia, Prussia, 7 m. W. by S. of Dortmund; has coal mines. Pop. (1910) 26,390.

Langensalza, tn. and wat.-pl., prov. of Saxony, Prussia, 13 m. N.N.W. of Gotha, with sulphur springs. Manufactures textiles, tobacco, lace, and chemicals, and has machine-shops and brick-yards. Pop. (1910) 12,667.

Langenthal, comm., Switzerland, canton of and 25 m. N.N.E. of Bern; has mineral springs and baths. Pop. (1910) 5,948.

Langerfeld, vil., Prussia, in Westphalia, 20 m. E. of Düsseldorf; manufactures steel goods, lace, etc. Pop. (1910) 14,801.

Langholm, markt. tn. and burgh of barony (1643), Dumfrieshire, Scotland, on riv. Esk, 21 m. N.W. of Carlisle. Manufactures tweeds, and has tanneries and a distillery. Telford the engineer was a native. Pop. (1911) 2,930.

Langhorne, JOHN (1735-79), poet, born at Kirkby Stephen; entered holy orders; renounced to London (1764); wrote for the *Monthly Review*, and did much other miscellaneous literary work. He published *Poetical Works* (1766); *Plutarch's Lives*, in conjunction with his brother (1770), which is still the standard translation. See *Memoirs*, by J. T. Langhorne, prefixed to edition of *Poetical Works* (1804).

Langiewicz, MARYAN (1827-87), Polish patriot, born at Krotoszyn; served in the Prussian artillery, fought under Garibaldi (1860), and, joining the Polish insurgents (1863), was elected dictator. His skilful guerrilla tactics resulted in several Russian defeats; but while attempting to rouse Polish Galicia, he was arrested by the Austrians, and was confined until 1865. He afterwards entered the Turkish service.

Langland, WILLIAM (?1330-1400), the probable author of *The Vision of Piers Plowman*, is one of the great figures in English literature of whom least is known. Born in the neighbour-

hood of Malvern, he was educated and assisted in his youth by patrons, whose death left him lonely and poor, and forced him to support himself and an uncongenial wife by discharging the thankless and ill-paid duties of a clerk and singer of masses for the dead in London churches. While dwelling in Cornhill, his heart turned towards 'Malverne bulles,' and it was there that he saw, all 'in a somer seson, when soft was the sonne,' the great vision of a 'faire felde ful of folke,' and learned the doom earned by all the insincere and purposeless, and the great glory of truth and of work.

This is the burden of the *Vision*, shown forth in changing scenes, in which move personified the great influences of that and of all time, as Holicherche, the Knight Conscience, Lady Meid (Mammon), the deceiver Fals, and the great central figure, Piers Plowman, at first the toiler at his furrow, but finally identified with the Christ Himself.

The three versions of the whole poem, all the work of Langland, were produced between 1362 and a date after 1390. An edition of the texts has been prepared by Professor Skeat for the Early English Text Society; he has also edited for the Clarendon Press an edition of the *Vision* (1886; new ed. 1905). See Jusserand, *L'épopée mystique de William Langland* (1893).

Langley, SAMUEL PIERPONT (1834-1906), American astronomer, was born at Roxbury, Boston, Massachusetts. He was elected to the chair of astronomy in Pennsylvania University, with the directorate of the Allegheny Observatory (1867), and became secretary to the Smithsonian Institution (1887). He observed the total solar eclipses of 1868, 1870, and 1878; invented the holometer, and employed it to explore (1881) the

infra-red solar spectrum, of which he published a map including 740 absorption lines (1901). His aeronautical experiments were intended to demonstrate the feasibility of mechanical flight (1896).

Langnau, comm., Switzerland, canton of and 15 m. E. of Bern; manufactures cheese, thread, and wooden articles. Pop. (1910) 8,511.

Langreo, tn., prov. Oviedo, Spain, 10 m. S.E. of Oviedo; has important coal and iron mines and iron foundries. Pop. 19,000.

Langres (anc. *Andematumnum*), tn., dep. Haute-Marne, France, near riv. Marne, 20 m. S.S.E. of Chaumont; of considerable military importance, and strongly fortified. Manufactures cutlery, and has a trade in grain, live stock, and wine. It is the seat of a bishopric. Pop. 9,800.

Langside, suburb of Glasgow, in par. of Cathcart, Renfrewshire, Scotland; was the scene of the defeat of Mary Queen of Scots by Regent Murray (1568).

Lang-son, cap. of the first military territory of Tong-king, French Indo-China, 74 m. N.E. of Hanoi, 12 m. from Chinese frontier; connected by railway with Phu-lang-thuong (62 m.), and with Na-Cham and Lung-Chau.

Langtoft, Peter or (d. 1307), rhyming chronicler, rendered Bosham's *Life of Becket* from Latin into French verse, and composed a versified chronicle of English history, afterwards translated by Robert de Brunne, published at Oxford (1725). The complete *Chronicle* was published by Thomas Thorpe in the Rolls Series (1866-8).

Langton, Stephen (d. 1228), English prelate, was educated in France, becoming chancellor of Paris University; made cardinal by Innocent III., who, at Viterbo, consecrated him archbishop of Canterbury. King John resist-

ing the papal appointment, interdict and excommunication were declared, and the king submitted. A warm partisan of the barons in their conflict with John, Langton's was the first signature appended to Magna Charta. The division of the Bible into chapters is attributed to him. See Hook's *Archbishops of Canterbury*.

Langtry, LILLIE, LADY DE BATHE (1852), actress, daughter of the Rev. W. C. le Breton, dean of Jersey, married Mr. Langtry (1874). In 1881 she made her début at the Haymarket Theatre as Blanche Haye in *Ours*, and later represented Kate Hardcastle in *She Stoops to Conquer*. In 1882 she appeared again at the same theatre, and also played Rosalind in *As You Like It* at the Imperial Theatre. She has twice been lessee of the Prince's Theatre (now Prince of Wales's), and has toured successfully with *Pecil* and other plays in America. In 1891 she leased the Princess's Theatre. Among her other characters are Juliana in *The Honeymoon*, Cleopatra, Lady Macbeth, Julia in *The Hunchback*, and Galatea. From 1905-6 she toured in South Africa and in America, and in 1908 appeared at the Haymarket as Mrs. Arundel in *A Fearful Joy*. After the death of Mr. Langtry she married Mr. Gerald de Bathe (1899), who succeeded to the baronetcy in 1907.

Language. See GRAMMAR, PHILOLOGY, GENDER.

Languedoc, old s. prov. of France, between the Garonne and the Rhone, cap. Toulouse. Its name is derived from the Old Fr. *langue* and the Provençal *oc* (from Lat. *hoc*, 'this'—the Provençal equivalent of the Old Fr. *oui*, *oil* (from Lat. *hoc illud*); hence the Old French language was known as the *langue d'oui*, *langue d'oil*). See Devic and

Vaissette's *Histoire de Languedoc* (1873).

Languidic, comm., France, in Morbihan, 11 m. N.E. of Lorient. Pop. 7,800.

Langur, the name given to the monkeys belonging to the genus *Semnopithecus*, which are Asiatic forms characterized by the slender build, the very long tail, the absence of cheek pouches, and the fact that the hind limbs are longer than the fore. The stomach is furnished with sacs or pouches; and the animals are largely herbivorous in diet. The true langur or hanuman (*S. entellus*) is common throughout the greater part of India, and is in most places regarded as sacred by the Hindus.

Lanidæ. See SHRIKE.

Lanier, SIDNEY (1842-81), American author and poet, was a native of Macon, Georgia. During the civil war, when he served with the Confederates, he contracted consumption. He published an account of his experiences during the war in *Tiger Lilies* (1867). In 1876 he wrote a guidebook to Florida, whither he had gone in search of health. This was followed by several tales for boys (1878-82), and a volume of verse (1877). Two years later he became lecturer on English literature in the Johns Hopkins University. His most important prose works were his *Science of English Verse* (1880), a discussion on the relations of music and poetry, and *The English Novel* (1883). His *Letters 1866-81* were published by his wife (1899).

Lankavatâra, an important work on Buddhist law and philosophy, dealing with many abstruse speculations. See works on Buddhism by Eugène Burnouf, Monier-Williams, Rhys-Davids, and others.

Lankester, SIR EDWIN RAY (1847), physiologist and naturalist,

was born in London. He has been successively professor of zoology and comparative anatomy at University College, London (1874-90); Linacre professor of comparative anatomy, Oxford (1891-8); and Fullerian professor of physiology and comparative anatomy in the Royal Institution, London (1898-1900). In 1898 Professor Lankester was appointed director of the natural history departments of the British Museum, but in 1906 was compelled to retire under the age limit. He was president of the British Association in 1906. Among his numerous publications are *A Monograph of the Cephalaspidian Fishes* (1870), *Comparative Longevity* (1871), *Degeneration* (1880), *Spolia Maris* (1889), *Extinct Animals* (1905), *The Kingdom of Man* (1907), *From an Easy Chair* (1908), and *Science from an Easy Chair* (1910). He was knighted in 1907. He is also editing *A Treatise on Zoology* (in progress).

Lanner (*Falco Faldeggii*), a small falcon found in countries bordering the Mediterranean.

Lannes, Jean, Duc de Montebello (1769-1809), French marshal, born at Lectoure; entered the army (1792), and served with great distinction under Napoleon I., winning special glory at Aboukir, Acre, Montebello, and Marengo. He also did brilliant service at Austerlitz, Jena, Eylau, and Friedland, and in Spain at Tudela and Saragossa, and was mortally wounded at Aspern. See Thoumas's *Le Maréchal Lannes* (1891).

Lannion, riv. port, dep. Côtes-du-Nord, France, on riv. Guer, 54 m. N.E. of Brest; industry mainly fishing, but there are also saw-milling, tanning, and the manufacture of agricultural implements. Pop. 5,800.

Lanoline, or wool fat, chiefly consists of cholesterol and iso-

cholesterol, isomeric compounds of an alcoholic constitution, and having the formula $C_{28}H_{48}OH$. Lanoline is prepared from 'suint,' or the grease of sheep's wool. As it is very easily absorbed by the skin, and has some antiseptic properties, it is extensively used as a salve and basis of ointments.

Lansdell, Henry (1841), English author, traveller, and divine; has travelled in every European country, through a great part of Asia and Africa, and across America (1870-98), for the purpose of visiting hospitals and prisons, or making explorations on missionary work. In Russian and Chinese Turkestan he made extensive zoological collections. He was the founder and editor (1875-86) of the *Clergyman's Magazine*, and his publications include *Through Siberia* (1882), *Russian Central Asia* (1885), *Chinese Central Asia* (1893), *The Sacred Tenth* (1905), and *The Tithe in Scripture* (1908).

Lansdown, hill (813 ft.), Somerset, England, 2½ m. N.W. of Bath. On it is Lansdown Tower, 130 ft., erected by Beckford, the author of *Vathek*. Two miles distant is the site of the battle of Lansdown (1643).

Lansdowne, Henry Charles Keith Petty-FitzMaurice, Fifth Marquis of (1845), English statesman, received his first official appointment (1869) as Lord of the Treasury in the government of which Mr. Gladstone was prime minister; became under-Secretary of State for War in succession to the Earl of Northbrook (1872). On Mr. Gladstone's return to power in April 1880, the Marquis of Lansdowne went to the India Office as under-secretary, but on July 8 retired, owing to disagreement with the policy of the Compensation for Disturbance (Ireland) Bill. On Mr. Gladstone's recommendation he was appointed governor-gen-

eral of Canada (1883), and five years later he became viceroy of India on the nomination of the Marquis of Salisbury (1888). Lord Lansdowne had, in the meantime, separated himself from the Gladstonian party on the question of Home Rule. He returned from India in 1893, and two years later joined the third Salisbury ministry with other Liberal Unionists. He accepted office as Secretary of State for War, and held this position till November 1900, when he became Secretary of State for Foreign Affairs. Mr. Balfour confirmed him in this appointment on the formation of his first ministry in July 1902, and he retained it till Mr. Balfour's resignation in December 1905. He is the leader of the Conservative Opposition in the House of Lords.

Lansdowne, HENRY PETTY-FITZMAURICE, THIRD MARQUIS OF (1780-1863), English statesman; entered Parliament for Calne (1803), and was Chancellor of Exchequer under Lord Grenville; succeeded Pitt as M.P. for Cambridge University (1805), and became Marquis of Lansdowne in 1809. He zealously supported the abolition of slavery and repeal of Catholic disabilities; also proposed free trade measures (1820), and measures for the relief of Ireland (1822). He held office under the Canning, Goderich, and Grey ministries (1830-41), lending valuable assistance in the passing of the Reform Bill (1832); was opposition leader during the Peel administration (1841-46), and led the peers under Lord John Russell (1846-52). He was twice offered the premiership (1852, 1855), but declined. He was an earnest though prudent Liberal and supporter of reform. See Walpole's *Life of Lord John Russell* (1889).

Lansdowne, WILLIAM PETTY, FIRST MARQUIS OF (1737-1805),

English statesman, born in Dublin; distinguished himself as a soldier; appointed a king's aide-de-camp (1760); and became Earl of Shelburne (1761). As politician he attached himself to the Chatham party, becoming Home Secretary (1782), and First Lord of the Treasury (1783), when, on his defeat by a coalition, he resigned the leadership of his party to Pitt. He was created Marquis of Lansdowne (1784). See *Life by Fitzmaurice* (1875).

Lansford, bor., Carbon co., Pennsylvania, U.S.A., 10 m. w. by s. of Mauch Chunk; has coal mines. Pop. (1910) 8,321.

Lansing, city, Ingham co., Michigan, U.S.A., cap. of state, 70 m. s.e. of Grand Rapids. Manufactures of agricultural implements, motor cars, stoves, engines, flour, carriages, and condensed milk. Pop. (1910) 31,229.

Lansingburg, tn. of Rensselaer co., New York, U.S.A., on E. bank of the Hudson, now forming a part of Troy. Pop. 13,000.

Lantana, a genus of tropical and subtropical evergreen shrubs and herbs belonging to the order Verbenaceæ. They bear small flowers in spikes or cymes. The corolla tube is slender, and the petal limbs five in number. Most of the garden varieties are derived from *L. camara*, a Jamaica shrub about eight feet in height, with a prickly stem, thick leaves, hairy below, and reddish or orange flowers.

Lantern, a conspicuous structure, usually circular, crowning the dome or tower in Roman and Gothic buildings. Its position is over the intersection made by the crossing of the nave and transepts in a church or cathedral. The glazed ceiling, for light and ventilation in private dwellings, is also known as the lantern. See Ruskin's *Seven Lamps of Architecture*.

Lantern, OPTICAL. See OPTICAL PROJECTION.

Lantern-fly, a name given to certain hemipterous insects belonging to the family Fulgoridae. The Chinese lantern-fly (*Fulgora candelaria*) is widely distributed in Asia.

Lanthanum, La., 138·9, a metallic element of the 'rare earths,' occurring in such minerals as cerite, orthite, monazite, gadolinite, and others. It is prepared by displacement from its chloride by sodium, and resembles iron in physical properties; sp. gr. 6·2, m.p. 810° C. It burns brilliantly when heated in air, and forms an oxide, La_2O_3 , and colourless salts. It is probably a member of Group III. of the Periodic Classification.

Lanuvium, anc. city, Latiun, Italy, 20 m. s.e. of Rome, near the Appian Way. A celebrated temple of Juno Sospita was built here. It was the birthplace of Antoninus Pius (86 A.D.). The small town of Civita Lavinia occupies part of the site.

Lanza, GIOVANNI (1815-82), Italian politician, born at Vignale, Piedmont; was elected deputy for Frassinetto (1848). Sitting with the Left Centre or Moderate Liberals, Lanza became minister of education under Cavour (1855-8), minister of finance (1858-9), president of the chamber (1860), minister of the interior under La Marmora (1864), and prime minister of the reconstructed cabinet (1869), but was defeated by the coalition (1873). He was a sincere patriot and a capable financier. See Tavallini's *Lanza ed i suoi Tempi* (1887).

Lanzarote, most easterly of the Canary Is. Area, 325 sq. m. Pop. 17,000.

Lanzi, LUIGI (1732-1810), Italian antiquary, born near Macerata; became a Jesuit, but on the suppression of the order

devoted himself to art and archaeology. His chief works are his *Storia Pittorica della Italia* (1789-1806; Eng. trans. 1828); *Saggio di Lingua Etrusca* (1789); *De' Vasi Antichi Dipinti* (1806), and other kindred books. He was also a graceful poet. See his *Opere postume* (1817), Cappi's *Biografia di Luigi Lanzi* (1840), and Segré's *Luigi Lanzi* (1904).

Laoag ('clear'), cap., prov. Ilocos Norte, Luzon I., Philippines, on riv. Laoag, 5 m. from the sea. Rice, corn, tobacco, and sugar are exported, and cotton is grown and manufactured. Pop. 35,000.

Laocoön, in ancient Greek legend, a Trojan priest of Apollo, who tried to dissuade his countrymen from bringing into the city the wooden horse by which Troy was captured. He even smote his spear into its side. It was perhaps in punishment for this that, when he was sacrificing to Poseidon, two snakes came out of the sea, and first entwining themselves about his two sons, and then about him as he hastened to their aid, killed all three, as is represented in the famous group found at Rome in 1506, and now in the Vatican. The date of its construction is uncertain, but the work is ascribed to three Rhodian sculptors, Agesander, Polydorus, and Athenodorus, by Pliny, *Natural History*, xxxvi. Virgil's description of the death of Laocoön in the second book of the *Eneid* is undoubtedly inspired by the marble group. For the story, see Virgil's *Eneid*, ii., and Hyginus's *Fables*, 133; for the Laocoön group, Murray's *History of Greek Sculpture*, Furtwangler's *Masterpieces of Greek Sculpture*, and Lessing's *Laokoon*.

Laodamia, daughter of Acas-tus, and wife of Protesilaus. After her husband's death at Troy, the gods granted her request that he might return from



Laocoön and his two Sons killed by Serpents.
Statue ascribed to Agesander, Polydorus, and Athenodorus of Rhodes, in the Vatican Museum, Rome.

Hades to converse with her for three hours; when he departed from life a second time, she died with him. See Catullus, 68.

Laodicea, the name of several cities in Asia Minor and Syria. The most important are: (1.) L. AD LYCUM, on the riv. Lycus, a tributary of the Meander, in ancient Phrygia (S.W. Asia Minor), about 11 m. w. of Colosse. It was founded by Antiochus II. about 259 B.C. One of the 'seven churches' (Rev. 1 : 11), it is mentioned in close connection with Colosse and Hierapolis (Col. 4:13, 15, 16). The great 'eastern highway' passed through it, and it was one of the richest cities in Asia (Rev. 3 : 17), and was renowned for its woollen manufactures, its carpets, and its woven garments (3:18). In the reign of Nero it was destroyed by an earthquake, and rebuilt by its wealthy inhabitants. According to tradition, Philemon was the first bishop. From Col. 4:16 it would appear that St. Paul wrote an epistle to the Laodiceans, and some authorities suppose this letter to have been the Epistle to the Ephesians or that to Philemon. (2.) L. AD MARE, about 50 m. s. of Antioch in Syria. It was founded by Seleucus I. about 300 B.C., and its modern name is Ladikiyi, or commonly Latakia. (3.) L. COMBUSTA, in Lycaonia, on the high-road from Ephesus to the East. Sorgan Ladik is on the site. See Wilson's *Handbook for Travellers in Asia Minor* (1895); Ramsay's *Cities and Bishoprics of Phrygia* (1895-7), and *Historical Geography of Asia Minor* (1890).

Laomedon, in ancient Greek legend, a son of Ilus and Eurydice, and father of Priam, Tithonus, and Hesione, was king of Troy, of which he was the founder. He roused the vengeance of Apollo and Poseidon by refusing them their guerdon after they had built

Troy for him (Homer's *Iliad*, xxi. 441; Horace's *Odes*, iii. 3).

Laon (Rom. *Laudunum*), cap. and fortress, dep. Aisne, France, 22 m. s.e. of St. Quentin; manufactures linen and metal goods. In the 10th century it was the residence of the Carlovingian kings. From 1419 to 1429 it was in the hands of the English. Here, in 1814, Napoleon was defeated by Blücher. The town capitulated to the Germans in 1870. Pop. 15,000.

Laos, general name for Central Indo-China, including the basin of the Mekong and the upper basins of the Menam and Salwin; bordering Siam and Burna on the w., Yün-nan on the N., Tong-king and Annam on the E., and Cambodia on the S. Laos is divided into three parts:—(1.) Eastern or French Laos, which has been under French protectorate since 1893; estimated area, 100,000 sq. m.; pop. 650,000. (2.) Siamese Laos, made up of a number of semi-independent principalities; estimated pop. 3,000,000. (3.) The Shan states of Lakon, Chiengmai, Nan, etc. The chief industry is cattle-raising; but the land produces rice, cotton, indigo, fruits, tobacco, and teak. Gold, tin, lead, and precious stones are found. See L. de Reinach's *De Laos* (1901), and Captain Gosselin's *Le Laos et le Protectorat Français* (1900).

Lao-tse (b. 604 B.C.), a celebrated Chinese philosopher, said to be the founder of Taoism, one of the most ancient and important religions of China, was born at Keuh-jin, in the district of Koo. Lao held office at the imperial court of Chow as keeper of the archives. He is celebrated as the reputed author of the book *Tao-teh-king*, the principal object of which is to establish a knowledge of a supreme being in three persons. In his book Lao has elaborated his idea of the relations existing between the universe and that which he calls *Tao*.

The primary meaning of this name of a thing which he declares to be without name is 'the way.' Hence it has acquired the symbolical meanings of 'the right course of conduct,' 'reason,' and it also signifies 'the word' (*logos*). 'All things originate from Taou, conform to Taou, and to Taou they at last return.' Taou may be described as (1) the absolute, the totality of being and things; (2) the phenomenal world and its order; and (3) the ethical nature of the good man and the principle of his action. See Douglas's *Confucianism and Taoism* (1879); Legge's *Religions of China* (1880); Balfour's *Taoist Texts* (1884); L. Giles's *Sayings of Lao-tzu* (1905); and W. G. Old's *Book of the Simple Way of Lao-tze* (1905).

Lapageria, a genus of liliaceous plants containing only one species—*L. rosea*, the Chilean bell-flower. This is an evergreen climbing shrub, almost hardy in this country. It bears large, rose-coloured, bell-shaped flowers of a somewhat waxy appearance.

La Palma, one of the Canary Islands, about 55 m. w.n.w. of Tenerife. Pop. 42,000.

La Pampa, terr. in central part of Argentina. Area, 56,300 sq. m. Pop. 90,000. Cap., General Acha, 385 m. w.s.w. of Buenos Ayres. Pop. 3,000.

Laparotomy (Gr. *lapare*, 'the flank'; *tomē*, 'an incision'), or abdominal section, is an operation involving the opening of the peritoneal cavity by means of an incision through the anterior abdominal wall. See SURGERY—Recent Developments.

La Paz. (1.) Department, N.W. Bolivia, bounded on the w. by Peru. The northern part is an extensive plateau, and well watered by the affluents of the Beni and Purus, but it is unhealthy. The southern part is mountainous, and contains the section of the An-

des known as the Cordillera Real. In this department are several of the highest peaks of the continent, notably Illimani (22,500 ft.) and Illampu or Sorata (23,500 ft.). Part of Lake Titicaca, which is drained by the Desaguadero, is included in the southern part. Gold, silver, copper, and tin are mined. Area, 53,770 sq. m. Pop. 520,000, five-sixths being Indians. (2.) Largest town in Bolivia, centre of above department, on the riv. Chuquiapu, or Rio de la Paz, 30 m. s.e. of Lake Titicaca. La Paz is an important commercial centre, and is connected with the Pacific coast by the Peruvian railway from Mollendo to Puno, and a Bolivian extension from Guagui to the Alto de la Paz. The vicinity of La Paz is rich in minerals. The city was founded in 1548, and named Nuestra Señora de la Paz; but at the declaration of independence the name was changed to La Paz de Ayacucho, in memory of the decisive victory over the Spaniards. Alt. 12,000 ft. Pop. 80,000. (3.) Town, prov. Entre Ríos, Argentina, on the riv. Paraná, 80 m. n.n.e. of Paraná city. Port of call for steamers; exports hides and preserved beef. Alt. 130 ft. Pop. 9,000. (4.) Town, Mendoza, Argentina, w. of the Desaguadero, 566 m. by rail from Buenos Ayres. Alt. 1,630 ft. Pop. 4,000. (5.) Seaport, Mexico, cap. of terr. of Lower California, on the s.w. coast of the Gulf of California. The chief industries are agriculture, and gold and silver mining. Pop. 5,500.

La Pérouse, JEAN FRANÇOIS DE GALAUP, COMTE DE (1741-88), French navigator, born near Albi, and entered the French navy. In 1782 he was employed by the French government to make a voyage of discovery round the world in the *Boussole* and the *Astrolabe*. After doubling Cape Horn, and exploring the coasts of California and Macao, and

making important discoveries from China to Kamtschatka, he reached Botany Bay. Finding the British already in possession, he left. The fate of his expedition was unknown until remains of it were found in 1827 by Captain Dillon on the isle of Vanikoro in Oceania. The *Journal Historique du Voyage de La Pérouse* was published (2 vols. 1790) by J. B. de Lesseps. See Dillon's *Narrative of a Voyage in the South Seas* (1829), and Mureau's *Voyage au Tour du Monde* (1797).

Lapeyrouzia, a genus of African bulbous plants belonging to the order Iridaceæ, with blue or red flowers, usually in long, irregular spikes. The flowers have slender perianth tubes and deeply cleft stigmas, and are scentless. The chief species are *L. cruenta*, carmine; *L. corymbosa*, blue and white; and *L. juncea*, rose. They should be grown under glass.

La Piedad, tn., Michoacan, Mexico, on the Lerma R., 70 m. S.W. of Guanajuato. Pop. 15,000.

Lapis Lazuli. See GEMS AND PRECIOUS STONES.

Lapithæ, in ancient Greek legend a people who dwelt in the mountains of Thessaly. Their king was Peirithous, who, as a son of Ixion, was a half-brother of the Centaurs, with whom he had a combat, in which the Centaurs were vanquished. The story is referred to by Homer in his *Odyssey*, xxi. 295, also by Diodorus, Pausanias, Ovid, and other ancient writers. See Keightley's *Mythology of Ancient Greece and Italy* (1838), and Preller's *Mythologie* (1854).

Laplace, PIERRE SIMON, MARQUIS DE (1749-1829), the greatest of French mathematicians, author of the *Mécanique Céleste*, was a native of Beaumont-en-Auge. In 1767 he removed to Paris, where he gained the notice of D'Alemb-

bert, and through his influence was appointed professor of mathematics at the Ecole Militaire. In 1796 he published his *Exposition du Système du Monde*, a compendium of astronomy in which he sets forth his famous Nebular Hypothesis, a work considered one of the masterpieces of the French language. In 1799 the publication of *Traité de Mécanique Céleste* brought him worldwide fame. His other works include *Théorie du Mouvement et de la Figure des Planètes* (1784); *Théorie Analytique des Probabilités* (1812-20), and many treatises in the transactions of learned societies. His *Oeuvres Complètes* were published by the Académie des Sciences (15 vols. 1878-1904). See Fourier's *Eloge* (1829); Arago's *Rapport* (1842); and Todhunter's *Elementary Treatise on Laplace's Functions* (1875).

Laplace's Equation, a partial differential equation discovered by Laplace in connection with the theory of attractions. It forms the basis of all his researches on attractions, and is of the greatest importance in physics, making its appearance in every branch of the science. A general solution has recently been discovered by Whittaker in the form of a definite integral, but what is generally required is a particular solution which satisfies certain further conditions. Such particular solutions can be expressed in Bessel Functions, or Spherical Harmonics. For references, see SPHERICAL HARMONICS.

Lapland. This territory, having no political existence at the present day, may be roughly described as the Arctic region of Norway, Sweden, and Finland, consisting mainly of mountain, forest, and morass. Höglström relates that the Lapps of his day (c. 1746) asserted that the whole of Sweden once belonged to their

ancestors; and Von Düben gives a tradition of the Mountain Lapps which assigns to their remote ancestors a home lying far to the S.E., apparently in the West Altai highlands. Thence, they allege, they wandered W. and N. in two divisions; the former of which eventually reached the sound separating Denmark from Sweden. This they ferried across in their small skin-boats. The tradition is interesting, if for no other reason than that modern science has deduced a race of 'reindeer-men' as the primitive inhabitants of Western Europe.

The Norwegians call them Finns; and it is necessary to bear in mind that the Finns of the Norse sagas were Lapps. They number about 20,000 in Norway, 7,000 in Sweden, and 3,000 in Russia. The Lapps call themselves *Sabme* or *Same* (pl. *Sameh* or *Samelats*); and their country is *Same-đdnam*. These names suggest *Suomi* (Finland proper) and *Suomalaiset* (Finlanders), and also the race of the *Samoyedes*, these three peoples being linguistically related.

The average stature of the Mountain Lapps is from five feet to five feet two inches, and they are generally taller than the coast tribes. Other characteristic features are their small, elongated eyes, high cheek-bones, snub noses, wide mouths, and pointed chins, with little or no beard, and thin, short legs.

Although they have abandoned their religion and many of their old customs, they mostly live a nomadic life as hunters and fishers, having large herds of domesticated reindeer. Modern civilization, however, is affecting them in many ways.

The best work on the subject is Baron von Düben's *Om Lappland och Lapparne* (1873), to which is appended a list of 332 bibliographical references. See also

Sir Arthur de Capell Brooke's *Winter in Lapland and Sweden* (1827), and Paul Du Chaillu's *Land of the Midnight Sun* (1888); also FINLAND.

La Plata. (1.) Capital of Buenos Ayres prov., Argentina, 35 m. S.E. of Buenos Ayres, and 3 m. from Ensenada, its port on the river Plate estuary. It exports cattle and agricultural products (to the value of £3,500,000 in 1909). Pop. 95,000. (2.) RIO DE LA PLATA. See PLATA.

La Porte, cap. of La Porte co., Indiana, U.S.A., 12 m. S.E. of Michigan city: popular summer resort. Manufactures motor cars, carriages, woolen goods, etc. Pop. (1910) 10,525.

Lappa, Chinese treaty port, at the mouth of the Canton River. Its exports are valued at £850,000 and its imports at £1,700,000 per annum.

Lapp Drum. The runic or magic drum formerly played an all-important part in the religious rites of the Lapps. By means of it the priest could place himself *en rapport* with the spirit world, and thereby foretell future events. See (by clairvoyance) the actions of persons in other countries, forecast the measure of success attending the day's hunting or other business, heal the sick, or, conversely, afflict people with disease, and, if necessary, cause death. For this malevolent application of its power the magic drum began to fall under the ban of the law as early as 1671, when, as Scheffer tells us, several Lapps were apprehended and their drums burnt.

See Erich Johan Jessen's *Ahandling om de Norske Finners og Lappers Hedenske Religion* (1765); Scheffer's *Hist. of Lapland* (1674); the Hon. John Abercromby's *Pre- and Proto-historic Finns* (1898); Baron von Düben's *Om Lappland och Lapparne* (1873); J. M. Dixon in the *Trans. Asiatic Soc. Japan*, vol. xi., part 1 (1883); and

T. G. Jackson's *The Great Frozen Land* (1895).

Lappenberg. JOHANN MARTIN (1794-1865), German historian, born at Hamburg. He became minister to the court of Berlin (1820), and in 1823 keeper of the archives of the senate of Hamburg, also representing that city in the Diet of Frankfort. He was the author of valuable historical works, notably *Geschichte von England* (1834-7), continued by Pauli (1853-81), and Eng. trans. by Thorpe. He also wrote a continuation of Sartorius's *Urkundliche Geschichte der Deutschen Hanse* (1830). See Meyer's *Johann Martin Lappenberg* (1867).

Lappmark ('Lapp Marches'), the five marches of Swedish Lapland, consisting of Åsele, Umeå, Piteå, Luleå, and Tornedal, with an area of 44,667 sq. m. Pop. (entirely Lapp) 6,800.

Lappa. See LAPLAND.

Laprade. PIERRE MARIN VICTOR RICHARD DE (1812-83), French poet and prose author, issued his first efforts in religious poetry as *Les Parfums de la Madeleine* (1830). *La Colère de Jésus* (1840) was followed by *Peyché* (1842), an endeavour to express Christian teaching in Hellenic myth. He also published *Idylles héroïques* (1858), *Les Voix de Silence* (1865), and other poems. His prose works include *Le Sentiment de la Nature avant le Christianisme* (1866), and *Le Sentiment de la Nature chez les Modernes* (1868). See *Lives*, in French, by Biré (1886), Condamin (1886), and Roux (1888).

Lapse. If a legatee or a devisee under a will predeceases the testator, the legacy or devise will generally lapse and sink into the residue of the testator's estate. But in England, since the Wills Act of 1837, if a testator leaves an estate tail or quasi-entail to A, and A predeceases the testator, leaving issue, who would

have inherited if A had lived, the devise does not lapse, but takes effect as if A had died immediately after the testator. And if a testator leaves any real or personal property to his child or issue, and such child or issue predeceases the testator, leaving issue, the devise does not lapse, but takes effect as if the child or issue had survived the testator.

Lapwing, a name sometimes applied generally to the members of the genus *Vanellus*, and sometimes restricted to one species, *V. cristatus*, the British peewit, lapwing, or green plover. The name lapwing is given to the bird on account of the slow flapping of the wings, while peewit is derived from the familiar cry. As a breeding species the bird occurs throughout Europe and Northern Asia. For allied forms, see PLOVER.

Lar, or LAAR, cap. of Laristan prov., Persia, 120 m. w.n.w. of Bender Abbas. It has a fine bazaar, and trades in tobacco, grain, and cotton. Pop. about 10,000.

Lar, or LARS, an Etruscan and Roman prénomén or first name, borne by Porsena, Tolumnius, and others. It is said to have meant 'king.' See Desvergers's *Etrurie et les Etrusques* (1864), and Müller and Deecke's *Die Etrusker* (1877).

Larache, or EL ARAISH, fort, port, cap. of Azgar prov., Morocco, at the mouth of the El Kus, 45 m. s.s.w. of Tangier. Exports bird seeds, pulse, beans, eggs, wheat, wool, hides, and wax. Imports (1909) £389,814; exports £119,942. Adjoins the ruins of ancient Lixus, or Shammish. Pop. 15,000.

La Ramée. See OUIDA.

Laramie, tn., Wyoming, U.S.A., cap. of Albany co., on Laramie plains, 40 m. w.n.w. of Cheyenne; has rolling mills, railway repair and machine shops, and glass and flour manufacture. Gold, silver, antimony, and grav-

phite are found in the district. Pop. (1910) 8,237.

Larbert, par. and vil., Stirlingshire, Scotland, 20 m. E.N.E. of Glasgow; has coal mines, and is an important railway junction. Pop. (1911) par. 12,984; vil. 1,500.

Larceny consists in wrongfully taking possession of the goods of another with a felonious intent to deprive the owner of his property in them. The possession must be obtained wrongfully, and therefore at common law a bailee could not be guilty of larceny; but this was altered by the Larceny Act, 1861. Larceny is practically confined to personal property, and does not extend to *terra natura* in which there is no property. It may be simple or compound. In the latter case it is accompanied by aggravating circumstances, either of means (violence), of place (a ship or a church), of persons (larceny by a postman), or of the thing stolen (larceny of cattle). Formerly petty larceny consisted in stealing articles not worth twelve pence, grand larceny in stealing articles above that value.

Larch, or **LARIX**, is a genus of hardy, deciduous, coniferous trees of very graceful habit. They bear monoecious flowers, the male catkins being small and oval, whilst the female ones are much longer. The leaves are bright green, linear, soft, and usually produced in short bundles on each side of the spray. They appear early in the spring. The timber is very hard and tough. The species most commonly planted is *L. europaea*, which grows to about a hundred feet in height. Other species are *L. occidentalis*, a tall and handsome American tree; *L. leptolepis*, a much smaller tree from Japan; *L. americana*, the so-called black larch of America; and the Russian *L. Ledebourii*.

Lard is pig's fat that has been melted and strained to remove

the connective tissue. It consists of a mixture of the glycerol esters of stearic, palmitic, and oleic acids, the olein being removable as 'lard oil' by pressure. Lard is of varying qualities, that obtained from the fat surrounding the kidneys (bladder lard) being the best. It is a soft, white grease that is almost free from odour, and melts about 40° C. to a clear liquid. Lard is used in pharmacy as a basis for ointments, and the oil as a lubricant.

Lardner, DIONYSIUS (1793-1859), writer of popular scientific works, born at Dublin. He devoted himself chiefly to literary and scientific work, and is now best remembered as the initiator and editor of *Lardner's Cabinet Cyclopaedia* (133 vols. 1830-49), to which he contributed many articles. His other works include a *Treatise on the Differential and Integral Calculus* (1825); and *System of Algebraic Geometry* (1823), *Astronomy* (1835-6), and *Optics* (1836).

Lardner, NATHANIEL (1684-1768), English Nonconformist divine, was born at Hawkhurst, Kent; studied at Utrecht and Leyden, and, after his return, joined the Unitarian Church. The publication of his *Credibility of the Gospel History* (1727) at once placed him high among Christian apologists. Other works were: *Collection of Ancient Jewish and Heathen Testimonies to the Truth of the Christian Religion* (1764-67); *History of the Heretics of the Two First Centuries* (1780), published posthumously. See *Life and Works*, by Kippis (1788).

Lareau, EDMOND (1848-90), Canadian politician and author, born at St. Grégoire, Quebec; was called to the bar (1870), became professor of civil law at M'Gill University (1876), and entered the Legislative Assembly of Quebec (1886). He wrote, in

French, histories of Canadian law (1872) and literature (1874).

Laredo. (1.) Coast tn., prov. Santander, Spain, 20 m. E. by s. of Santander, on coach road to Bilbao. The principal industries are fish-preserving and manufactures of rope and sails. Pop. 5,000. (2.) City, Texas, U.S.A., cap. of Webb co., 150 m. s.s.w. of San Antonio, on the L. bk. of the Rio Grande, opposite Nuevo Laredo, Mexico, with which it is connected by two steel bridges. It has manufactures of iron, brick, and machinery. Pop. (1910) 14,855.

Lares. THE, were objects of worship at Rome, originally Cthonic deities, guardians of the whole community, worshipped on May 1; they were divided into two classes, family *lares* and public *lares*. The name appears to be identical with the Etruscan *lar*, 'king'; and the *lares* are similar to the Greek heroes. See Marquardt and Mommsen's *Handbuch d. Römischen Alterthümer*; Granger's *Worship of the Romans*; Keightley's *Mythology of Ancient Greece and Rome*; W. Warde Fowler's *Roman Festivals* (1908), and Gifford Lectures (1910).

Largo, a term in music indicating a slow degree of *tempo* combined with breadth and dignity of style. *Larghetto* means a little quicker than *largo*.

Largo, UPPER and LOWER, two coast villages 1 m. apart, and par. (7,371 ac.), S.E. Fifeshire, Scotland, 8 m. S.E. of Cupar, and at foot of Largo Law (965 ft.). Industries are fishing, linseed-crushing, and net-making. Alexander Selkirk, the original of Robinson Crusoe, was a native. Pop. of par. (1911) 2,274.

Largs, seaside resort on N. Ayrshire coast, Scotland, 6 m. N. of Wemyss Bay. Here Alexander III. of Scotland defeated Haac of Norway (1263). Pop. 3,300.

Lari, tn., prov. Pisa, Tuscany, Italy, 15 m. S.E. of Pisa, in wine-producing district; has hot springs. Pop. 13,000.

Larino, tn., Italy, in prov. of and 20 m. N.E. of Campobasso; has a 13th century cathedral and ruins of an amphitheatre. Pop. 7,000.

La Rioja. See RIOJA.

Lario Lake. See COMO.

Larissa, the name of several towns in ancient Greece, of which the most important was Larissa in Thessaly, on the river Peneus. It was also the name of the citadel at Argos. The frequency of the name suggests that originally its meaning was 'fortress,' or the like. Modern Larissa, in Larissa prov., is on r. bk. of the Salambris (Peneus), 35 m. N.W. of Volo, and 124 hours' journey by rail from Athens; has manufactures of silk and cotton. Pop. 16,000. See Bursian's *Geographie d. Griechenlands* (1862-71), and Tozer's *Lectures on the Geography of Greece* (1873).

Laristan, maritime prov. of Persia, between the Persian Gulf in the S. and Farsistan and Kirman in the N. Estimated area, 20,000 sq. m. It is an arid and sandy waste, interspersed with salt steppes. Camels are reared, and silk is manufactured. The capital is Lar.

LaRive, AUGUSTE DE. See RIVE.

Larivey, PIERRE (c. 1540-1612), French dramatist, was the author of prose plays, largely taken from the Italian, the best being *Les Esprits*. His work probably influenced that of Molière. The plays appear in *L'Ancien Théâtre Français*, edited by Viollet le Duc. See Macgillivray's *Life and Works of Pierre Larivey* (1889).

Lark, passerine bird belonging to the family Alaudidae. In all, the first toe has a very long, straight claw; the wings are long and pointed, as are also the inner secondaries of the wing. Many

of the larks are desert birds, as, for example, *Alauda desertorum* of N. Africa; others, such as the woodlark (*Alauda arborea*), haunt wooded country; while the common skylark (*A. arvensis*) prefers open districts. There are about a hundred species, almost all confined to the Old World.

Larkhall, tn., Mid Lanarkshire, Scotland, near the Avon, 3 m. S.E. of Hamilton; has coal-mining and brick and tile making industries. Pop. (1911) 14,202.

Larkhana, chief tn. of Shikarpur dist., Sindh, Bombay, India, 50 m. s.s.w. of Jacobabad; a fortified town. The neighbourhood, from its productivity, is known as the 'Eden of Sindh.' Manufactures cotton, silk, leather, and paper. Pop. 13,000.

Larkspur. See DELPHINIUM.

Larksville, tn., U.S.A., Pennsylvania, in Luzerne co., 43 m. S. of Denver. Pop. (1910) 9,288.

Larnaca, or LARNAKA (anc. *Citium*), chief seapt. of Cyprus, on the S. coast, 25 m. S.E. of Nicosia. Birthplace of the Stoic Zeno. Exports include grain, cotton, fruit, and gypsum. Pop. 8,000. See CITIUM.

Larne, mrkt. tn. and seaside resort, Co. Antrim, Ireland, N.W. of the entrance to Lough Larne. Industries: bleaching, linen and woollen weaving, alumina works, and paper-making. There is daily communication by mail steamer (shortest sea passage) with Stranraer, Scotland, 39 m. distant. Pop. 6,700.

La Rochefoucauld, FRANCOIS, DUC DE (1613-80), Prince de Marsillac, a descendant of one of the most ancient families of France, was born in Paris. At the age of sixteen he joined the army. Under the influence of Mme. de Chevreuse he took part in the intrigues against Richelieu, which resulted in his being exiled to Verteuil (1637-9). Subsequently, a liaison with the beautiful Madame de

Longueville (1645) encouraged his participation in the Fronde (1648). He was badly wounded at the siege of Paris, and again in 1652 at the fight at the Porte-Saint-Antoine. After twenty years of fighting and intriguing, he retired from public life, and passed his leisure in the elaboration of his *Mémoires* and *Maximes*. He died at Paris. An unauthorized issue of his *Mémoires* appeared in 1662, but only a third of it was the work of La Rochefoucauld, and nothing like a correct edition appeared till 1817. In literary and historical value these *Mémoires* rank among the best of their time. The first edition of the *Réflexions sur Sentences et Maximes Morales* appeared in 1665, and contained 317 maxims, expanded in later editions to about 700. Of the literary quality of the *Maximes* there has never been question. In their union of perspicuity, terseness, and polish they are unsurpassed; and the acuteness of their thought is as remarkable as their literary excellence. The *Maximes* do not pretend to be a system of ethics. His *Oeuvres Complètes*, ed. Gilbert and Gourdault (*Coll. de Grands Écrivains*), appeared in 1868-83. See Bourdeau's *La Rochefoucauld* (1895); Sainte-Beuve's *Portraits de Femmes* (new ed. 1856); and Prévost-Paradol's *Etudes sur les Moralistes Français* (1865).

La Rochejaquelein, HENRI DU VERGIER, COMTE DE (1772-94), one of the constitutional guard of Louis XVI.; took command of the La Vendée royalists (1793), and distinguished himself heroically in a vain struggle to resist the republic. He died at the battle of Nouaillé.

La Rochejaquelein, LOUIS DU VERGIER, MARQUIS DE (1777-1815), brother of the preceding, left France during the revolution, but returned in 1801. Napoleon failed to win him over,

and in 1813 he led the royalists of La Vendée and Poitou, being one of the first to recognize the Bourbons (1814). He led the Vendéan troops during the 'hundred days,' and died at Pont-des-Mathis. His wife, Marie Louise Victoire, wrote interesting *Mémoires* (1815; new ed. 1859).

La Rochelle. See ROCHELLE.

La Roche-sur-Yon, tn., France, cap. of Vendée dep., 38 m. s. of Nantes. Pop. (comm.) 13,700.

La Roda, tn., Spain, prov. of and 22 m. n.w. of Albacete. Pop. 7,000.

Larousse. PIERRE ATHANASE (1817-75), French lexicographer, taught in a large institution at Paris, and for its library he produced many valuable educational works, including the *Grand Dictionnaire Universel du XIX. Siècle* (1866-76; a new and abridged ed. *Nouveau Larousse Illustré*, 1898-1904). Lesser works are the *Nouveau Dictionnaire* (30th ed. 1876), and *Dictionnaire Complet Illustré* (new ed. 1895-6).

Larrea, a genus of tropical evergreen shrubs, with yellow flowers, belonging to the order Zygophyllaceæ. *L. mexicana* is the creosote plant of N. America, whose powerful smell protects it from animals.

Larrey, DOMINIQUE-JEAN, BARON (1766-1842), French surgeon, born at Baudéan; became military surgeon-in-chief at the age of twenty-six, and passed through campaigns in Italy, Egypt, Germany, Spain, and Russia. He instituted 'flying ambulances' (1793), and did much to further surgery.

Larsen, KARL HALFDAN EDWARD (1860), novelist and humorist, one of the finest stylists of modern Danish literature. His best books are *Modet og den blank Klinge*, an account of a Spanish tour, and *Poetisk Tyskland*. In *Dr Ix* (1898) he at-

tacked the hypersestheticism of the day.

Larva (Latin, a mask), a name which was originally applied only to the young stages of insects when these differ strikingly from the adults in appearance, but which by extension is now generally applied to the young of animals when they do not closely resemble their parents. It is a necessary part of the definition of the term that the young be adapted for a free-living existence, usually under conditions differing from those to which the adult is fitted. Thus it would be incorrect to call the developing chick within the egg a larva, though it differs in very many points of structure from the adult bird. In this case the term embryo would be employed. On the other hand, the tadpole or caterpillar has each its own breathing organs, and each is capable of seeking its own food. Where the larva differs very markedly from the adult, there is usually a process of metamorphosis.

A point of great interest in regard to larvae is that in many cases they possess organs which are absent from the adult, but which were presumably present in the ancestral form. Thus, while a frog has no gills, a tadpole has gills, such as the ancestor of the frog doubtless possessed.

Larvæ. See LEMURES.

Larvik. See LAURVIK.

Laryngismus stridulus (synonyms: 'false croup,' 'spasmodic croup,' and 'child crowing'), a spasmodic affection of the laryngeal muscles, by the contraction of which the glottis is almost closed and inspiration is temporarily arrested. The condition is due to nervous derangement, and is often associated with infantile convulsions, being closely allied to the epilepsy of children. In the great major-

ity of cases the child recovers when apparently just at the point of death. The carbon dioxide accumulated in the blood acts as a sedative and antispasmodic to the nervous system, with the result that the spasmodic contraction is relaxed. During an attack antispasmodics, such as warm baths and inhalations of steam or of nitrite of amyl, generally hasten recovery, while an emetic is frequently of service.

Laryngoscope, a small circular mirror attached at an angle of about 120° to a slender handle, by which in examinations of the throat it is placed in the pharynx with its back against the uvula, and so manipulated that its surface reflects the interior of the larynx, or when inverted, that of the naso-pharynx. The instrument was invented (c. 1855) by Manuel Garcia (1805-1906), a teacher of singing, who used it primarily to observe the mechanism of his own vocal organs during phonation. (See VOICE.) Soon after its invention Dr. Czermak, of Pesth, introduced the laryngoscope into medical practice.

Larynx. A larynx first appears in Amphibia. It is slightly represented in the lower forms, but reaches considerable differentiation in the Anura (frogs and toads), where vocal cords are present; and the croaking sound which the animals produce is often intensified by sacs placed at the angle of the jaw. Reptiles do not display any advance in structure as compared with amphibians. In birds the conditions are remarkable, for an upper and a lower larynx are both present. The lower larynx or syrinx is the organ of voice, and is of complicated structure. It lies at the lower end of the trachea, or at its junction with the bronchi. A structure homologous with the larynx of other vertebrates lies at the top of the trachea, but it

is rudimentary, and is incapable of producing sound. The larynx is well developed in all mammals, and is peculiar in always possessing an epiglottis and a thyroid cartilage. The muscles are also very well developed as compared with other vertebrates. In certain of the Primates—e.g. the howling monkey (*Mycetes*) and the orang—there are large resonating chambers connected with the larynx. In man the larynx lies in the upper and front part of the neck, between the base of the tongue and the upper end of the trachea. It consists of a tubular framework of nine cartilages, which are connected with each other by joints, membranes, ligaments, and muscles. The largest of these cartilages is the thyroid, which is shield-shaped, and consists of two lateral wings diverging from a vertical central ridge in front. The upper part of the ridge forms the *pomum Adami* or Adam's apple of the throat, and is more prominent in men than in women, because of the greater size of the thyroid cartilage in the male sex. Above and in front of the thyroid cartilage is a thin leaflike structure, the epiglottis, which during ordinary respiration stands erect at the back of the tongue, but during the act of swallowing is pushed backwards and downwards so as to bridge over the upper opening into the larynx and ensure the passage of food into the gullet behind. The laryngeal cavity is lined by mucous membrane continuous with that of the pharynx above and the trachea below, but in the larynx the membrane has a double reduplication on each side. The upper folds cover delicate fibrous bands and form the false vocal cords, which get the name 'false' because they are not directly concerned in the production of voice. The lower pair of folds are the true vocal cords,

and enclose strong fibrous bands of elastic tissue, known as the inferior thyro-arytenoid ligaments, which run from the arytenoid cartilages behind to meet anteriorly at the centre of the thyroid. Parallel with and outside these ligaments lie the thyro-arytenoid muscles, whose contraction relaxes the vocal cords. Between the false and the true cord on each side lies a pouch-like cavity, the ventricle of the larynx, which in life plays the part of a resonating chamber. In order that sound waves may be formed, the vocal cords must be parallel, and have a current of air passing between them; they must also be more or less tense, and the pitch of the musical note depends upon the degree of tension of the vocal cords. In ordinary speech the larynx is concerned with the production of those consonants which are voiced and of all the vowels, whose differences depend upon adventitious sounds formed by the tongue or lips, or on the introduction of different combinations of harmonics by alterations in the resonating chambers, the mouth, and the pharynx.

The chief pathological affections of the larynx are (1) new formations, (2) paralysis, and (3) various forms of laryngitis. The larynx is frequently the seat of new formations of a simple nature, such as warty growths and polypi, or, on the other hand, malignant and cancerous. Paralysis of one or both vocal cords may result from pressure upon the laryngeal nerves by aneurisms or other swellings in adjacent organs. Laryngitis may be acute, and may be merely a part of a general catarrh of the respiratory mucous surfaces; or it may be more chronic, as in the form known as clergyman's sore throat. An edematous type of laryngitis also occurs, and is attended by special danger, as the swelling

may lead to great dyspnoea and even to fatal suffocation. In grave cases early tracheotomy is advisable. A most intractable and painful form of laryngeal disease is tubercular laryngitis.

Direct injuries to the larynx are most usually caused by foreign bodies drawn in by an inspiration during the act of swallowing. Should the foreign body not be coughed up, removal with the aid of a laryngoscope and appropriate forceps may sometimes be successfully carried out, but generally tracheotomy is necessary. See CROUP.

Lasalle, city of Lasalle co., Illinois, U.S.A., on the Illinois R., 80 m. s.w. of Chicago, in the bituminous coal region. Industries: zinc smelting, brick and cement making. Pop. (1910) 11,537.

La Salle, RENÉ ROBERT CAVELIER, SIEUR DE (1643-87), French explorer, born at Rouen; left France when twenty-three for Canada, where from 1679 he explored the great lakes, the Ohio, and Mississippi, and took possession of their shores in the name of France. Leaving France on further travels (1684), he had difficulties with his escort, and was finally assassinated. A journal of his voyages was published (1723). See Parkman's *La Salle and the Great West* (1869).

Lascar (a camp-follower or soldier; from Hindustani and Persian *laskari*) is now freely applied to sailors of East Indian birth serving on British ships.

Lascaris, ANDREAS JOHANNES, or JANUS (c. 1445-1535), surnamed 'Rhyndacenus.' Coming early to Italy, he was welcomed by Lorenzo de' Medici, in whose service he travelled, and discovered valuable MSS. at Mt. Athos. He is best remembered as the editor of several *editiones principes* and a Greek anthology. See Villemain's *Lascaris* (1825).

Lascaris, CONSTANTINE (d. c. 1493), a pioneer of Greek learning in the West. Reaching Italy from Constantinople (1464), he taught successively at Milan, Rome, Naples, and Messina, in which last-named town he died. His Greek grammar, *Erotemata* (1476), was the earliest printed Greek book in Italy.

Las Casas, BARTOLOMÉ DE (1474–1566), bishop of Chiapa, Mexico, called the 'Apostle of the Indians,' was born at Seville. After studying at the University of Salamanca, he joined an expedition of Columbus to the W. Indies (1498–1500), and subsequently went to Haiti, where he took holy orders. Repairing to Cuba (1511), he presently returned to Spain to protest against the prevalent system of employing Indians as slaves. From 1530 he worked incessantly in various parts of Central America. After some years spent in Europe, he accepted the bishopric of Chiapa in 1544. He left an unfinished *Historia general de las Indias*, published in the 'Colección de documentos inéditos para la Historia de España' (1875–6); *Veynte Razones* ('Twenty Reasons' in support of Indian freedom); *Brevísima Relación de la Destrucción de las Indias* (1552), and other works. His *Oeuvres Complètes* appeared in Paris (1822). See *Life* by Sir Arthur Helps (1868) and Prescott's *Conquest of Mexico* (1843).

Las Cases, EMMANUEL AUGUSTIN DIEUDONNÉ MARIN JOSEPH, COMTE DE (1766–1842), French historian, born near Revel in Languedoc; entered the navy, but fled to England during the revolution. After Napoleon's accession to power he returned to France, and laboured at the completion of his *Atlas Historique* (1803–4; new ed. 1826). For this work Napoleon made him a baron, and gave him the office of chamberlain. After Waterloo he accom-

panied the ex-emperor to St. Helena, and wrote at his dictation the *Mémoires de Sainte Hélène* (1821–3). See his *Mémoires* (1819).

Lascelles, SIR FRANK CAVENDISH (1841), British diplomatist, held subordinate posts in the embassies at Madrid, Paris, Berlin, Copenhagen, Rome, Washington, and Athens before he was sent to Bulgaria as agent and consul-general in 1879. In 1886 he was transferred to Roumania, as minister-plenipotentiary, and in 1891 to Persia. On the death of Sir R. Morier he was appointed ambassador at St. Petersburg (1894), and was ambassador at Berlin (1895–1908).

La Serena, or COQUIMBO, city, Chile, cap. of prov. Coquimbo, 7 m. from the port of that name. It has smelting works. Pop. 16,500.

Lasiopetalum, a genus of Australasian evergreen shrubs belonging to the order Sterculiaceae.

Lasker, EDUARD (1829–84), German publicist, of Jewish parentage, filled some posts in the Prussian law courts, and in 1865 entered the Prussian legislature. A member also of the German Parliament from 1867, he became a leading spirit of the national Liberal party. He strove earnestly towards the unification of Germany, and took a chief part in remodelling the judicial system (1867–77). Lasker's chief publication was *Zur Verfassungsgeschichte Preussens* (1874), a collection of essays. See Wolff's *Zur Erinnerung an Eduard Lasker* (1884), and Freund's *Einiges über Eduard Lasker* (1885).

Lasker, EMANUEL (1868), German chess player, born at Berlinchen, Brandenburg. His achievements first attracted attention at the Nuremberg tournament (1883), and became still more notable at Breslau (1889).

Nuremberg (1896), London (1899), and Paris (1900). He defeated Blackburne in London (1892), and Steinitz in America (1894), winning the return game at St. Petersburg (1896), and first prizes in tournaments in several cities (1892-1900). Lasker has published *Common Sense in Chess* (1896), and some mathematical essays. In 1904 he founded *Lasker's Chess Magazine*.

Las Marias, tn., Porto Rico, 13 m. E.N.E. of Mayaguez. Pop. of jurisdiction, 11,000.

Las Palmas, chief tn. on N.E. shore of Grand Canary I., prov. Canaries, Spain, 50 m. S.E. of Santa Cruz de Tenerife, the seat of government. Industries include fishing and the manufacture of glass, hats, and leather goods. Exports bananas, potatoes, tomatoes, and other fruit and vegetables. In 1910 the total tonnage entering the port was 9,046,663. Pop. 45,000.

Lassa. See LHASSA.

Lassalle, FERDINAND (1825-64), the most brilliant and picturesque of German socialists, was foremost among the founders of the Social Democratic party in Germany. Between the ideas and methods of Marx and those of Lassalle there is great difference. Marx was an internationalist; Lassalle was an ardent patriot, a fanatical advocate of German unity, which gave him influence over Bismarck, and liberalized Prussian domestic politics for a time. A duel brought his brilliant and tumultuous life to a close at the early age of thirty-nine. The story of his life is the basis of Meredith's novel, *The Tragic Comedians*. See *Life by George Brandes* (1911), Dawson's *German Socialism and Ferdinand Lassalle* (1899), and *Autobiography of Princess Racovitzá* (1910).

Lassell, WILLIAM (1799-1880), English astronomer, was born at Bolton, Lancashire. He built an

observatory at Starfield, near Liverpool, and constructed a two-foot speculum, with which he discovered the satellite of Neptune (1846). The same instrument disclosed Saturn's eighth satellite, Hyperion (1848), and the inner Uranian satellites, Ariel and Umbriel (1851). In 1861 he mounted a four-foot equatorial reflector at Malta, and catalogued with it six hundred new nebulae.

Lassen, CHRISTIAN (1800-76), Norwegian Orientalist, born at Bergen. At Bonn he studied under Schlegel, collaborating with him in the publication of the *Rāmāyana* and *Hitopadesa* (1829-31). Becoming professor of Indian language and literature there (1830), he published an edition of the *Gitagovinda* (1837), and a new edition of Schlegel's *Edition du Bhagavadgita* (1846). Other important works were *Indische Altertumskunde* (1844-61); *Institutiones Linguæ Pracritice* (1837); *Anthologia Sanscrita* (new ed. 1868); and *Zur Geschichte der Griechischen u. Indo-skythischen Könige in Baktrien, Kabul, und Indien* (1838).

Lassen, EDUARD (1830-1904), Danish musical composer, born at Copenhagen; became widely known in Belgium for several notable operatic works and popular songs. After the retirement of Liszt from the Court Theatre at Weimar, the baton was transferred (1861) to Lassen, and he wielded it until 1895. He was the composer of the operas *Le Roi Edgard* (produced by Liszt, 1857), *Frauenlob* (1860), *Le Captif* (1868), and *Tristan and Isolde* (1874).

Lasso, a plaited rope of raw hide, provided with a running noose at one end, and used in Spanish America and elsewhere by ranchmen and others for capturing or bringing down cattle.

Lasthenia, a genus of half-hardy annual plants belonging to

the order Composite. They bear heads of yellow flowers in summer. *L. glabrata* is the species best worth cultivation.

Lastra, comm., Italy, in Tuscany, 3 m. w. of Florence; manufactures straw hats. Pop. 12,000.

Las Vegas, city of New Mexico, U.S.A., cap. of San Miguel co., at the E. base of the Rocky Mts., 50 m. E. by s. of Santa Fé. Important wool market and agricultural centre. Hot springs, 6 m. distant, are much resorted to. Pop. 3,600.

Latacunga, chief tn. in Leon prov., Ecuador, in the Andes, between Cotopaxi and Chimborazo, 50 m. s. of Quito. Contains former palace of the Incas. Trade in saltpetre. Pop. 15,000 (mostly Indians).

Latakia, or LADIKIYEH (anc. *Laodicea ad Mare*), seapt. in Beirut vilayet, Syria. Exports barley, eggs, olive oil, and Latakia tobacco. Pop. about 22,000.

Latania, a genus of fan palms, natives of the Mascarene Is. They are tall-growing, bearing at their summit a tuft of handsome, long-petioled, palmately flabelliform leaves. Male and female flowers are borne on separate plants. The chief species are *L. Loddigesii*, growing to a height of about ten feet, the leaves being about three feet long; *L. Verschaffeltii*, with pale green leaves with yellow ribs; and *L. Commersonii*, with deeply-incised leaves.

Latteen-sail, a triangular sail extended on a yard which is slung about one quarter from the lower end to a mast, and rigged in such a way that the upperend is raised in the air, and the lower end is brought down to form the tack. The word is merely a corruption of 'latin,' and the rig is mainly used in the Mediterranean.

Latent Heat, the name given to the amount of energy which is absorbed by unit mass of a sub-

stance as it changes its state from solid to liquid or liquid to vapour. The change is usually effected by the application of heat, and what is observed is that as the change of state is being accomplished the temperature of the mixed states does not change. The explanation of the phenomenon follows at once from the modern view that heat is a form of energy. To liquefy a solid or vaporize a liquid, work must be done in removing constraints, and it is in the doing of this work that energy in the form of heat is consumed. In the reverse processes of liquefaction of vapours and solidification of liquids, energy in the form of heat is set free. This is usually done by direct abstraction of heat. When, however, these changes of state occur independent of any direct operation of cooling, there is evolution of heat, and the temperature rises. In like fashion, liquefaction of solids and evaporation of liquids are necessarily accompanied by a cooling effect. See HEAT.

Lateran, St. John, a celebrated church in Rome, regarded as the first and most illustrious in the Roman communion. It stands on a site originally occupied by the palace of the Laterani family, which palace was confiscated by Nero, and subsequently was ordained as the patrimony of the popes of Rome by Constantine, and was occupied by them till the 14th century. The present structure is of composite character, but includes a few fragments of the basilica built by Pope Sylvester I. in 324. Here five ecumenical councils have met, hence called Lateran councils.

Laterite. Laterite is a fine red or brown earth, a characteristic surface accumulation of tropical countries such as India, Arabia, and the Sahara. Chemically, laterite is a hydrated oxide

of iron and alumina, with often a noticeable percentage of titanium; it is therefore closely related to bauxite. The most extensive deposits of laterite are those of the Deccan of India, where they lie on the famous Upper Cretaceous basaltic lava flows. See *Mem. Geol. Surv. of India, 'Manganese-Ore Deposits of India,'* by Leigh Fermor (1909).

Laterza, comm., Italy, in Apulia, 25 m. n.w. of Taranto. Pop. 7,800.

La Teste-de-Buch, seapt. and sea-bathing resort, France, in Gironde dep., 32 m. s.w. of Bordeaux. Pop. 7,000.

Latham, JOHN (1740 - 1837), English ornithologist, practised as a physician at Dartford until his retirement in 1796. He was one of the founders of the Linnean Society in 1788. Among his works are *A General Synopsis of Birds* (1781 - 5), *Index Ornithologicus* (1790), and *A General History of Birds* (1821-8).

Latham, ROBERT GORDON (1812 - 88), English philologist, ethnologist, and physician, born at Billingborough, Lincolnshire; became professor of English in University College, London, in 1839. He was the author of *The English Language* (1841), *Natural History of the Varieties of Mankind* (1850), *Man and his Migrations* (1851), and *The Nationalities of Europe* (1863). He was one of the first to suggest a probable European origin for the Aryans.

Lathbury, DANIEL CONNOR, journalist and churchman. He was educated at King's College, London, and Brasenose College, Oxford. As editor of the *Guardian* for sixteen years, he proved himself one of the ablest and most influential journalists the Church of England has had. In 1900 he founded the *Pilot*, and was responsible for its editorial columns during the four years of

its existence. He was chosen to write the religious history of William Ewart Gladstone, which the official biographer, Lord Morley, was unable to undertake. The work, in two volumes, was published in 1910.

Lathe, a contrivance for shaping or 'turning' wood, metal, or ivory into forms of a circular or oval section. The simplest form of lathe, and one which is still generally used in India, consists of two rigid centres, between which the object is revolved by means of a piece of cord wound round it, and pulled alternately backwards and forwards. The 'dead-centre' lathe, which was commonly used early in the last century, was but a modification of this primitive form, preserving its chief drawback of an alternating motion. In the modern small wood-working lathe the reciprocating motion of the treadle is converted into rotary motion by means of a crank, which is attached to the axle of a fly-wheel. This in its turn communicates rotation by a driving-belt to a small wheel on the lathe spindle or mandrel, which rests in bearings in a rigid headstock. An object which is to be shaped externally is fixed between the projecting chisel-shaped end of the mandrel and the point of a movable dead-centre clamped to the bed-plate, being rigidly attached to the first and free to revolve on the latter. With an object which requires internal boring, or turning at the end, the dead-centre is dispensed with, and a chuck or holder introduced, in order to form a firm connection with the mandrel. The fly-wheel of larger lathes is mechanically driven, and transmits motion to the mandrel by means of bevel and gear wheels. For turning metal a 'slide-rest' is employed. This is fixed on the bed-plate of the lathe, along which it is moved by means of a longitudinal screw.

An in-and-out motion is given to the upper part—which holds the tool, and slides on the lower portion—by a transverse screw. In mechanically-driven lathes the slide-rest can be made to travel automatically along the bed-plate, thus taking off a complete cut for the full length at each position of the tool. A modification of this principle governs the action of the screw-cutting lathe. *Turret* lathes, some of the most ingenious of this class of tools, are used for the manufacture of small articles in large quantities. A 'turret,' or tool-box, holding a number of tools of different kinds, is revolved automatically, and brings the tools in succession up to the object being turned. Stops and a trip-action are arranged to withdraw the turret and partly rotate it as each tool finishes its work. See Horner's *English and American Lathes* (1900), Lukin's *The Turning Lathe* (4th ed. 1894), Compton and Good's *The Speed Lathe* (1899), and Hasluck's *Lathe Work* (1902).

Lathom, par. and tnsip., Lancashire, England, 14 m. N.E. of Liverpool. Lathom House, the seat of the Earl of Lathom, is built in the Italian style. The original mansion was famous for its gallant defence by Charlotte, Countess of Derby, in 1644, when she held out against the Parliamentarians for four months until relieved by Prince Rupert. Pop. urb. dist. (1911) 7,235.

Lathraea, a genus of leafless herbaceous plants belonging to the order Orobanchaceæ. They are natives of Europe and temperate Asia, and are parasitic on the roots of certain trees. The only species found in Britain is *L. squamaria*, the toothwort, with spikes of bluish flowers streaked with red, which appear in March.

Lathyrus, a genus of mostly climbing plants belonging to the order Leguminosæ. The genus

includes many species of great garden value. Among them are Lord Anson's pea, *L. magellanicus*, a handsome perennial climber from the Strait of Magellan, bearing purple flowers in summer and autumn; *L. grandiflorus*, an annual species bearing rose-coloured flowers; *L. rosus*, a perennial from Iberia; *L. sylvestris platyphyllus*, the well-known white or purple flowered everlasting pea; and *L. rotundifolius*, with rose-coloured flowers in early summer. Among the British species of *lathyrus* are *L. sylvestris*, with yellowish and purple flowers; *L. pratensis*, the meadow vetchling; and *L. maritimus*, a prostrate shore plant.

Latiano, comm., Italy, in Apulia, 12 m. W.S.W. of Brindisi. Pop. 7,500.

Latifundia, the plural of a Latin word meaning a large estate. From 200 B.C. onwards the small farmers in ancient Italy found corn-growing less and less profitable owing to the importation of foreign corn. They sold their land, and flocked into Rome and other towns. The land thus came to be held by rich owners in large estates, mostly devoted to pasture; consequently the rural population diminished. This was the system of *latifundia*, which was one of the chief causes of the decline of Rome and Italy. See Mommsen's *Hist. of Rome*.

Latimer, HUGH (?1485–1555), English reformer. The son of a Leicestershire yeoman, he became a fellow of Clare College, Cambridge, in 1510, and subsequently took holy orders. His first step towards revolt is seen in his severe criticism of the lives of English priests, but the ecclesiastical wrath thus drawn down upon him was counteracted by the favour of the king, Henry VIII. The emancipation of the country from the Pope's authority in 1534 went far to establish the position of Latimer.

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Latimer Clark's Standard Cell. See **CELL, VOLTAIC.**

Latin Empire. See **BYZANTINE EMPIRE, ROME.**

Latin Language and Literature. 1. *Language.*—The Latin language, originally the speech of the inhabitants of Latium, belongs, like the Greek, to the Indo-European (Indo-Germanic, Aryan) family of speech. It is classified with the Italic group of languages, other members of which are the Oscan and Umbrian and some minor dialects. This Italic group of languages, in vocabulary, declension, and conjugation, presents many points of resemblance to the Greek, so that formerly it was held that the Greek and Italic languages were separate developments of a previous Greco-Italic group; but further investigations have entirely overthrown this theory. It is now clearly proved that the closest affinities of the Italic group of languages are with the Celtic dialects—viz. Welsh, Cornish, Breton, Manx, Erse, and Gaelic. It is the case not only that the Italic and Celtic groups of languages are closely akin, but also that they are the only two groups of Indo-Germanic languages between which any closer connection with each other than with any other

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ancient times, at least in careful writing, the capital forms of the letters alone were used, whether in the style called capital or uncial; but as early as the 1st century A.D., and probably earlier, a form of cursive writing in small letters was in use—examples of it may be seen in the *graffiti*, or wall-writings, at Pompeii—which developed into the small letters as now used.

The classical pronunciation of the Latin letters is satisfactorily established; it is as follows:—The vowels *a*, *e*, *i*, *o*, *u* were pronounced as in Italian, though *ɛ*, *ɪ*, *ɔ*, *ʊ* were open sounds, *ɛ*, *i*, *o*, *u* close sounds. The pronunciation of the diphthongs *ae*, *oe*, *au*, and *eu* was that of the component vowels pronounced in quick succession. Of the consonants, *t* and *d* were pronounced as true dentals (*i.e.* with the tongue touching the teeth, not the roof of the mouth, as in English); *p* and *b* corresponded to the English sounds; *c* and *g* were always hard (*e.g.* Cicero was pronounced Kikero, *genius* with *g* as in 'get'); *q* usually occurred before *u*, being pronounced as in English; *f* was as in English; *h* was a weaker sound than the English, tending to disappear, as it has in the Romance languages; *s* was always the sharp sound, as in 'this,' never as in 'these'; the consonants *t* and *u* were pronounced like the English *y* and *w*, though the latter was perhaps a weaker sound, such as is heard in the French *oui*; *l* and *r* were as in English, except that *r* was strongly trilled; at the beginning of a word *m* and *n* were sounded as in English, but at the end of a word or syllable were weakly sounded; in such positions *m* or *n* is written indifferently in inscriptions, as, for example, *comparo* or *comparo*. The weakness of the sound *m* at the end of the word is illustrated by the fact

that in poetry a syllable ending in *m* is elided just as if it ended in the vowel alone.

The Latin accent differed from the Greek in being a stress accent like that of English or modern Italian. In classical times the rule of the accentuation of words was very simple—viz. that in all words it fell on the penultimate syllable of a word of two or more syllables if that syllable was long, but if it was short, on the antepenultimate if the word contained three or more syllables—*e.g.* *amā'bo*, but *ama'bītis*. There are traces, however, of an earlier system of accentuation in Latin, according to which the first syllable of each word bore a strong stress accent.

Regarded from the point of view of its sound, the Latin language was less euphonious and heavier than the Greek—its words possess a greater number of consonants in proportion to vowels; and while Greek words can only end in the consonants *v*, *p*, *s*, and *t*, or vowels, Latin words end freely in *l*, *m*, *n*, *r*, *s*, and *t*, and occasionally also in *b*, *c*, and *d*. The proportion of long to short vowels is also greater than in Greek, and the variety of vowel sounds (including diphthongs) is smaller. As a result, the Latin language loses something in elegance, variety, and lightness; but it gains, if not proportionately, in weight and dignity. Latin poetry, written in metres borrowed from Greek poets, moves with a certain lack of freedom; but as manipulated by its greatest masters, such as Horace and Virgil, it attains a majesty and solemnity unsurpassed by the poetry of any language.

The Latin vocabulary again, as compared with the Greek, is deficient. Roman writers themselves were well aware of this deficiency, like Lucretius, who complains of the *patrii sermonis egestas*, 'the

poverty of our native speech.' In terms of law, administration, and warfare—the true spheres of Roman genius—the language is rich and abundant. Generally it may be said that the vocabulary suited the needs of practical life—of the farm, the law court, the assembly, and the camp—and was less adapted to the requirements of the poet, the philosopher, the scientist, and the critic. The best testimony to the usefulness of the vocabulary is its wide adoption by modern languages. Latin increased its vocabulary largely by borrowing from Greek, and also to a less extent by borrowing from other Italic dialects and from Celtic.

The highest qualities of Latin are perhaps to be found in its methods of expression and construction, which again illustrate its practical character. Particularly to be observed are its preference of concrete to abstract expression, its logical arrangement of clauses, and the precision with which it subordinates the subsidiary ideas to the chief thought in the sentence. The two main defects of the language, as regards construction, are its lack of articles, either definite or indefinite—*e.g.* *homo* means 'the man,' or 'a man,' according to the context, which sometimes causes ambiguity; and its lack of a past participle active, which necessitates the use of the cumbersome 'ablative absolute' construction (which also is ambiguous, as *his dictis abiit* may mean 'having said this he went away,' or 'when some one else had said this he went away'), or other circumlocutions. But, on the whole, in virtue of its above-mentioned qualities of logical precision and concreteness, of its terseness—a page of English usually translates into three-quarters of a page of Latin—its directness and dignity, Latin must be ranked as one

of the noblest forms of human speech.

Latin can hardly be said to have possessed any dialects, or, if it had, they have left scarcely any traces. It was, of course, originally the speech of a small nation, the Latins; the aggrandizement of Rome caused it to spread over Western Europe, and to some extent towards the East, but the varieties so produced in it can scarcely be ranked as dialects. It is, however, clear that in many respects the language of the populace differed from the literary Latin which has come down to us in books. This is proved by the fact that many common words in the Romance languages are derived, not from their equivalents in classical Latin, but either from words used in slightly different or special senses in classical Latin, or from words not found at all in the best writers: thus in French *feu* (*focus*), *cheral* (*cabellus*), *maison* (*mansio*), *aller* (*adnare*), correspond to the classical *ignis*, *equus*, *domus*, and *ire* respectively; and *battre*, *arriver*, *coucher*, *épée*, and many other similar words, find their derivation in forms not used at all in good Latin. Many verb forms also—such as *recoir*, *pouvoir*, *savoir*, and the like—show by their form that they are derived from incorrect variations of the true language, which no doubt were current in classical speech.

The purest Latinity is generally held to be that of the first century B.C., represented by writers such as Cicero, Cæsar, Sallust, and Livy in prose; Lucretius, Catullus, Virgil, Horace, and Ovid in poetry. The Latin of the first century A.D.—the period often called the Silver Age—shows a degeneration in the admission of foreign, chiefly Greek, idioms and words; and this degeneration increases with the successive centuries. The barbarian

invasions did much to corrupt the vocabulary; yet it was not until long after the fall of the Western empire, in 476 A.D., that Latin ceased to be the speech of Italy, and yielded to its descendant Italian. For many centuries longer Latin continued to be the common language of scholars, and, until the 17th century, of diplomats.

The discussion of the Latin language cannot be concluded without the mention of its importance as the mother of the Romance languages. Its relation to them is particularly interesting, as it corresponds with that of the original Indo-Germanic languages to the various Indo-Germanic tongues, such as Latin itself, Greek, Aryan, Celtic, Teutonic, and the rest; and thus it illustrates the development of their languages from the parent speech. These languages are the Italian, French, Provencal, Spanish, Portuguese, Wallachian, and Rhaeto-Romanic. For the study of any one of them, and still more for the comparison of any two or more, a knowledge of Latin is indispensable.

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works referred to under PHILOLOGY. Lexicography: Forcellini (1858-79), Lewis and Short (1879), White and Riddle (1889); and Du Cange (1678, for Middle and Low Latin).

2. *Literature.*—The Latin literature, or the literature of ancient Rome—for though the language cannot be called Roman, being shared by the other Latin communities, the literature did not arise until they were merged in the Roman state—possesses a history which covers some seven or more centuries. Its beginning may be dated with almost absolute exactness at 240 B.C., the year in which the first Latin play was exhibited at Rome. Various dates may be assigned for its close, such as 404 A.D., the year of Claudian's death; 476 A.D., the date of the abdication of Romulus Augustulus, the last of the Western emperors; or 524 A.D., the year in which Boëthius perished. Adopting the last date, so as to include in the present survey his interesting and important work, we assign a duration of over seven and a half centuries to the life of Latin literature. Impossible as it is to draw a rigid line of demarcation between different epochs, we may venture to subdivide the history of Latin literature into three main periods—(1) The Republican Age, from 240 to 27 B.C.; (2) the Augustan Age, from 27 B.C. to 14 A.D., or perhaps rather later; and (3) the Age of the Empire, from, say, 25 to 524 A.D. Yet not all the writers included within these chronological limits can be ranked as classical; narrower limits must be assigned to that part of the literature which merits such a description; and Plautus (fl. 200 B.C.) and Suetonius (fl. 120 A.D.) may be regarded as the first and the last of the great classical authors.

(1.) The Republican Age (240 to 27 B.C.).—Latin literature, more

perhaps than that of any other nation, was essentially imitative and artificial; no doubt in early days rude hymns and ballads were produced, but nothing approaching the rank of literature existed until Greek influence began to make itself felt. It did so by 250 B.C. or so, and for most of the next century Latin literature consisted almost entirely of translations from the Greek. Three names deserve special mention as the founders of the literature—those of Livius Andronicus, Nævius, and Ennius. Of the three it is to be noted that Nævius alone was a native Latin. Andronicus (c. 284-204 B.C.) was a Greek prisoner of war from Tarentum, who took his name, Lucius Livius, from that of the Roman family to which he had belonged when a slave. He was occupied at Rome as a tutor to wealthy families. He translated Greek plays into Latin, the first of which appeared about 240 B.C.; and also translated the *Odyssey*, and, it is to be remarked, into the native Saturnian verse. Rude as this performance no doubt was, it was important as naturalizing in Rome one of the greatest works of Greek genius; it was still used as a schoolbook in the time of Horace. Only a few fragments of it survive. Gaius Nævius (c. 264-194 B.C.) was a figure of greater distinction. He also translated Greek plays, but went further in writing original plays on Roman subjects, and in composing an epic—still in the Saturian metre—on the Punic wars. Too few fragments survive to enable a judgment of the work to be formed; however, it retained its popularity in the Augustan age, and is said by the Virgilian commentators, Macrobius and Servius, to have been conveyed in large portions by Virgil into his *Aeneid*. A masculine strength and dignity mark the few extant

fragments. Quintus Ennius (239-169 B.C.) was a native of Calabria; he served in the second Punic war, but only obtained Roman citizenship about 180 B.C.; he was patronized by the great Scipio Africanus. He was the first regular literary man of the Western world—writing on grammar, spelling, pronunciation, metre, and even on shorthand, in addition to his more ambitious works in tragic and epic poetry. The titles of more than twenty of his tragedies and many fragments are known, the latter remarkable for beauty of phrase and a certain grand dignity of style. Even more important was his epic, the *Annales*, a history of Rome in eighteen books, from the landing of *Aeneas* to his own day. In it he used the Greek hexameter measure with such success as to make it for all time the chief Roman metre. If for nothing else, for this his poem deserves fame; but for centuries it retained its hold on Roman readers, even after Virgil's day, though, as compared with the beauty of the latter's poems, Ennius could only show an archaic dignity. The fragments of the poems, several hundreds in number, are marked by their rugged but powerful versification, and the breadth and wisdom of their thought. Nævius and Ennius were followed by two more tragic poets, Marcus Pacuvius (220-132 B.C.) and Lucius Accius (170-c. 90 B.C.), of whom less is known, though Cicero placed the former, and general opinion the latter, at the head of Roman tragedy, which declined after their time.

Comedy at Rome was contemporary with tragedy. Andronicus, Nævius, and Ennius wrote comedies as well as tragedies, but they were excelled in this department by Plautus, Cædilius, and Terence. Titus Maccius Plautus (254-184 B.C.) wrote perhaps some

forty-five plays, of which twenty are extant. All are adaptations, not to say translations, from the Greek, as indeed were also all the works of Cæcilius and Terence. His plays represent every variety of comedy, from the *tragédie bouffé* to the farce. His best works are perhaps the *Amphytrio*, the *Trinummus*, the *Aulularia*, and the *Rudens*—a comedy with an unusually romantic setting. Many of his plays are coarse, but they possess an inexhaustible fund of animal spirits, wit, and humour. The language is vigorous and pure, and the influence of Plautus on modern comedy is unmistakable. Of Cæcilius (fl. 180 B.C.) little is known; only fragments of his works survive. Terence—in full Publius Terentius Afer (185–159 B.C.)—differed from Plautus in preserving not only the Greek setting but also the Greek spirit and tone in his plays. The comedy of Plautus is Roman in all but origin; that of Terence Greek in all but language, hence his plays were never popular at Rome. They lack vigour and humour; their excellences are those of polish, elegance, character-drawing, and pure diction. Julius Cæsar's criticism of Terence as a 'halved Menander' cannot be improved. All the six plays which he wrote are extant. There were other Roman comedians, such as Titinius (fl. 170 B.C.) and Afranius (fl. 90 B.C.), who wrote thoroughly Roman comedies, not adapted from Greek models; but none of their works survive, and nothing of them except their names is known. After Terence comedy decayed at Rome. Its place was taken partly by the mimes or farœa, which do not belong to literature; partly by the satire which was being developed; and largely, too, by gladiatorial shows, which appealed more forcibly to Roman taste.

At Rome, as everywhere else, poetical literature was earlier in date than prose; and at Rome, too, the usual rule obtained that the earliest form of prose writing was devoted to historical records. But Rome's earliest chroniclers, Quintus Fabius Pictor (fl. 215 B.C.) and Lucius Cincius Alimentus (fl. 210 B.C.)—the former the author of a history of Rome from the earliest times to his own; the latter of a contemporary history—wrote their works in Greek. Marcus Porcius Cato (234–149 B.C.) was the founder of Latin prose literature. His works included more than 150 speeches; the *Origines*, a work of discursive history, intermixed with geography, politics, and personal reminiscences; and the *De Re Rustica*, on farming; but only the last is extant. It shows no attempt at style, but much practical sagacity and a dry humour. Historians of the same period (c. 140 B.C.) are Cassius Hemina, Lucius Calpurnius Piso, and Lucius Coelius Antipater. The works of all of them are lost. About the same period treatises on jurisprudence began to be composed. But the most important literary figure of the second half of the 2nd century B.C. was Gaius Lucilius (180–103 B.C.), the founder of the Roman *satura*—a term the original meaning of which was not satire, but 'a medley,' i.e. a composition of miscellaneous contents, and which was first applied to a rude kind of drama lacking a plot, afterwards to sketches of social life and character, and finally developing into that criticism of popular manners and habits, and even of individuals, which is denoted by the word *satire* in its modern sense. Lucilius called his satires *Sermones* ('Talks'), a title afterwards adopted by Horace; they consisted of thirty books, describing the life of his time, his travels and adventures, discussing also

the literary and grammatical controversies of the day, and really giving the poet's own autobiography. They were written in hexameters of careless construction; Lucilius cared more for speed than for polish. He has the credit of having invented the one original department of Latin literature which has been imitated by such modern writers—not to mention the professed satirists—as Montaigne and Pepys. Only fragments of his works are extant. Nor has any of the other literature of the same period survived, though names of historians are known, and also of orators, such as Scipio the Younger, Lælius, the Gracchi, M. Antonius, and Licinius Crassus, who prepared Roman oratory for its full development in Cicero, who now demands attention. Marcus Tullius Cicero (107–43 B.C.) is in many ways the chief figure in Roman literature; whatever views are taken of his statesmanship, his literary importance, both in his own times and to the modern world, cannot be denied. His excellence is not confined to a single department. Of his speeches, the Verrine, Catilinarian, and Philippic orations are perhaps the chief; his treatises on literature comprise the *De Oratore*, the *Brutus*, and the *De Optimo Genere Oratorum*; his philosophical works include the *De Finibus*, the *De Amicitia*, and the *De Officiis*. As for his Letters, they possess an undying charm, both from the vividness of their style and the complete revelation which they give of their writer's character. They make the age of Cicero better known to us than perhaps any period before the 17th century. It should not be omitted that Cicero made several attempts in poetry: he translated the *Phænomena* of Aratus, and also wrote a poem on his own

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consulship, as to which Juvenal's criticism, that he need not have feared the sword of Antony if he had written all his works in the same style, may be accepted. Yet his experiments in poetry assisted one of the greatest of Roman poets—viz. Lucretius, who clearly studied and imitated them. Titus Lucretius (97–53 B.C.) is practically unknown except by his great poem, *De Natura Rerum*. Of his poem—the subject of which is the Epicurean philosophy—it can safely be said that while at its worst it is not poetry at all, but philosophical arguments—and that uninteresting—forced into metre, at its best it reaches a height of majesty and a depth of pathos unequalled by any Roman poet, and by few poets of any nation. Younger contemporaries of his were Cinna, Calvus, and Catullus, who represent a totally different school of poetry. Of these, Gaius Valerius Catullus (c. 84–54 B.C.) alone calls for notice, as neither of the others is represented by any extant works, though Calvus at least was ranked with him by good judges. Catullus's fame rests chiefly on those of his poems which celebrate his love for Lesbia—poems which, for their direct expression of feeling, have never been surpassed. He also wrote poems on his travels, satirical verses, elegiacs on various subjects, an epithalamium of great beauty, the *Atys*, and an idyll in hexameters on the marriage of Peleus and Thetis. His lyrics are his real achievement in poetry, and in them it is his directness and simplicity of utterance that constitute his strength. His work, which always breathes Roman dignity and force, ends an era in Roman poetry, for a new one to begin some fifteen years after his death with the works of Virgil.

Cæsar (102–44 B.C.) is the chief

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representative, after Cicero, of the Latin prose of the republic, though his extant work is limited to his *Commentaries* on the Gallic and the civil wars. But his speeches and letters were held to be unexcelled even in that age; he also wrote on grammar, on astronomy, and two attacks on Cato. His *Commentaries* are distinguished by the brevity and brilliance of their style, and by the skill with which Caesar, though never stooping to self-laudation, makes them the justification and the monument of his achievements. As a model of pure Latinity, Caesar ranks with Cicero alone. Other historians of the period were Q. Sellustius Crispus (86-34 B.C.), who wrote two extant monographs on the Jugurthine war, and on the conspiracy of Catiline, and also five books of histories on the period from 79-70 B.C., of which only fragments remain; and Cornelius Nepos (99-24 B.C.), whose only extant work is a collection of Greek and Roman biographies, whose title to survival has been their suitability for the use of beginners in Latin. The one remaining figure of the republican period is M. Terentius Varro (116-27 B.C.), whose career began before that of Cicero, and ended in the year of the establishment of the empire. Of his 600 or 700 volumes only one on agriculture and six (out of twenty-five) on the Latin language are extant. Most of his works were antiquarian and scholarly rather than literary in the true sense; but the loss of his 150 Menippean satires, and of his *Imagines*, or lives with portraits of celebrated Greeks and Romans—the first recorded instance of the publication of an illustrated book—is much to be deplored.

(2) *The Augustan Age* (27 B.C. to 14 A.D.).—The Augustan age is one of those remarkable periods

of human history, like that of Pericles, of Elizabeth, of Louis XIV., and of Anne, which are distinguished by the contemporary appearance of several geniuses of a high order. It can boast of five poets of the first rank (Virgil, Horace, Propertius, Tibullus, and Ovid), and of one great historian (Livy), besides minor writers. The Romans had then realized their empire of the world, and the 'Roman peace' established by Augustus supplied them with the repose necessary to survey and celebrate their pre-eminence. It is his expression of this Roman spirit that has justified the claim of Virgil to be considered the representative poet of Roman literature. In originality, and in elevation of thought, he certainly does not excel Lucretius; in genuine poetic force Catullus, and in perfection of form Horace, may rival him; but he alone has fully expressed for succeeding ages the highest aspects of Roman character and genius. P. Vergilius Maro (70-19 B.C.) was a native of Cisalpine Gaul, and thus, like Horace, may have had some non-Latin strain in his blood. His chief works are the *Ecllogues*, pastoral idylls in the manner of Theocritus; the *Georgics*, on husbandry, imitated from Hesiod; and the *Aeneid*, the model of which is the epic of Homer. It is at once obvious that Virgil owed much to study and imitation of Greek poets, and not of them only, but of Romans like Naevius, Ennius, and Lucretius. But it was not this study that made him great; it was most of all the above-mentioned expression of the Roman spirit, in a lesser degree his perfect mastery of metre and language, and his exquisite sensibility for human weakness and suffering, for honour in word and nobility in deed, that placed him at once among

the great poets of the world. His reputation was made even with the publication of the *Georgics*; and the *Aeneid* immediately won a renown which has never been obscured, in spite of changes of taste which have at times challenged his pre-eminence. Quintus Horatius Flaccus (65-8 B.C.) was a friend as well as a contemporary of Virgil; but he differs from him entirely in being a thorough man of the world, while Virgil was always a recluse. Whether in his *Odes*, his *Satires*, or his *Epistles*, Horace always shows the same polished worldly wisdom, combined with humour, geniality, good sense, good feeling, and good taste. In perfection of verbal and metrical finish he is not surpassed even by Virgil; he brought Latin lyric metres to such a point that no successor could follow him without imitation, or desert his example without disaster, and thus with him Latin lyric poetry ended. Sextus Propertius (49-15 B.C.) needs less consideration; he wrote four books of elegies, chiefly love poems, of which the first is remarkable as having been written before he was twenty. Albius Tibullus (54-19 B.C.) is a less ambitious but more natural poet; his work consists of three books of elegiac poems, marked by a true sincerity and delicacy of feeling. Ovid—in full, P. Ovidius Naso (43 B.C. to 18 A.D.)—is remarkable as the most productive of Roman poets. He wrote both in elegiacs and hexameters: in the former metre, the *Heroides*, the *Amores*, the *Ars Amatoria*, the *Tristia*, the *Ex Ponto*, and the *Fasti*; and in the latter, the *Metamorphoses*. He lacks the imagination, the passion, and the elevation of a great poet; his distinctive qualities are his facility, his apt choice of words, his smooth versification, and his

power of story-telling. These were the great poets of the Augustan age. In prose there is but one outstanding name, that of Livy. Titus Livius (59 B.C. to 18 A.D.) was a native of Padua; his great work was a history of Rome from the earliest times to 9 B.C. It consisted of 142 books, and its composition occupied the historian for over forty years. Only thirty-five books are now extant, viz. 1-10, ending with the third Samnite war (c. 300 B.C.), and 21-45, from 218 to 168 B.C.; of the other books epitomes exist. Livy's merits as a historian are not those of the patient inquirer into facts. But his sense of the majesty and imperial mission of Rome, his insight into character, his mastery of dramatic situation, his power of vivid description, and his varied and flowing style give him a high place among historians who are read for their narrative. His language marks the highest development of Latin prose. Other historians of the period were Pompeius Trogus (fl. 10 A.D.), who wrote a history of the world in forty-four books, of which a valuable abridgment has come down to modern times; and Velleius Paterculus (fl. 25 A.D.), who wrote a brief history of Rome in two books, which are extant, but of small value. Less important writers were the fabulist Phædrus (fl. 30 A.D.), the survival of whose works was due to their use as a schoolbook; Manilius (fl. c. 14 A.D.), author of an astronomical poem of some 4,000 lines, rather dull in style, but containing passages of vigorous thought and expression; Celsus (fl. c. 14 A.D.), author of an encyclopædia, of which only eight books on medicine were preserved to become a standard work until recent times; and L. Annaeus Seneca (64 B.C. to 39 A.D.), father of the philosopher, and

author of some rhetorical exercises, which are chiefly valuable as showing the development of Latin prose.

(3.) The Age of the Empire (25 to 524 A.D.).—For a quarter of a century or more from 20 or 25 A.D., literature appears to have been almost extinct at Rome. But for the next half-century or more after 50 A.D. Rome could show a succession of writers, both in poetry and in prose, not indeed—with the possible exception of Tacitus—of outstanding genius, yet successful enough to win and deserve a lasting fame. Their period is called the Silver Age, as contrasted with the Golden or Augustan Age. The first of these is L. Annæus Seneca (4 B.C. to 65 A.D.), the son of the rhetorician, and himself famous as a moralist. His moral writings are numerous, and contain much lofty thought and deep feeling, very rhetorically expressed. He also wrote nine tragedies, of a purely declamatory type, untrue to life, and unsuited to the stage. It should be remarked that his father and he himself—born at Cordova—were natives of Spain; so, too, were his nephew Lucan, and the later writers Martial and Quintilian. Henceforth Roman literature is not confined to the Latin race, and its language is increasingly corrupted by the influence of the provincialism of its users. M. Annæus Lucanus (39–65 A.D.) is remarkable for the production of his epic, the *Pharsalia*, at such an early age—he was executed for complicity in the Pisonian conspiracy against Nero at twenty-six—for the brilliance of his language, and the force of many of his statements. His poem is a mine for quotations, but it lacks power of characterization, variety of rhythm, and true poetic feeling. Quintilian aptly sums him up as better to be imitated by orators than by poets.' Another

young poet, and a friend of Lucan, was Aulus Persius Flaccus (34–62 A.D.). His only work consists of six satires, amounting to over 600 lines of verse, marked chiefly by obscurity and acquaintance with books rather than mankind, but also by moral earnestness, delicacy of feeling, and a genuine delight in secluded study. Another poet of the same period is Titus Calpurnius Siculus (fl. 55 A.D.), who ventured, with some success, to imitate the bucolic poems of Virgil in his *Elegies*. Prose writers were Lucius Junius Moderatus Columella (fl. 65 A.D.), who wrote a treatise on agriculture; and Petronius Arbiter (d. 66 A.D.), the 'glass of fashion' at Nero's court, and also a capable statesman, whose work, the *Satyricon*, is a sort of novel, remarkable for its pictures of life of every kind, its frequent use of the dialect of the lower orders, its wild humour, and, it must be confessed, also for its flagrant indecency in many passages. With the establishment in 69 A.D. of the dynasty of the Flavian emperors under Vespasian a new school of literature appears, which was distinguished by its learning and its desire to imitate rather than to excel the Augustan writers. First may be mentioned the three epic poets, Publius Papinius Statius (d. c. 95 A.D.), Valerius Flaccus (d. c. 90 A.D.), and Silius Italicus (25–101 A.D.). Statius's poems are a *Thebais* (an epic on the story of Thebes), an *Achilleis* (one on that of Achilles, of which only one book and part of another were finished), and a number of miscellaneous poems called *Silvae*. His epic is highly finished, but tedious; his minor poems are more graceful and pleasing. Flaccus wrote an *Argonautica*, imitated from that by Apollonius Rhodius; but he is so long-winded that even in eight books he leaves the story unfinished. Still more

tedious is Silius Italicus, whose epic dealt with the second Punic war in 17 books. He makes historical events depend upon a mythological machinery like that of Homer and Virgil, in manner so tasteless that he may well be classed as the writer of the worst epic ever written. A very different genius from any of these three was possessed by the epigrammatist Marcus Valerius Martialis (c. 40-104 A.D.), a native of Bilbilis in Spain. His twelve books of epigrams can scarcely be called poetry. Their chief value is the pictures they give of contemporary Roman life; their merit is a neatness of language, and a precision—often laboured—in making a definite point. Of the prose writers of this age, the elder Pliny comes first in point of date. Gaius Plinius Secundus (23-79 A.D.) was remarkable for his unwearying pursuit of knowledge. His works were numerous, including histories of Rome and of the wars on the Germanic frontiers; but only the thirty-seven books of his *Natural History* survive, which is a priceless collection of facts on every branch of natural science then known. Marcus Fabius Quintilianus (c. 35-95 A.D.) was much more of a literary artist; his life-work was the teaching of rhetoric, and his great achievement is his *Institutio Oratoria*, which is extant. It deals with the practical training of an orator, and, by way of doing so, gives valuable advice on education, and a masterly criticism of Latin literature; it is full of sayings of profound wisdom. Cornelius Tacitus (c. 55-120 A.D.) is really the last great figure of Latin literature, and the greatest of Roman historians. His works include the *Agricola*, a biography of his father-in-law; the *Germany*, a monograph on Germany; the *Annals* and the *Histories*, of each of which only parts

survive; and an early work, *De Oratoribus*. The greatness of Tacitus as a historian consists not in his impartiality or true presentation of events, but in his dramatic power and study of character, his moral elevation, and, above all, in the marvellous incisiveness of his style. No writer could ever put more meaning into few words. His friend, Pliny the Younger—Gaius Plinius Cæcilius Secundus (61-105 A.D.)—though he plumes himself on his imitation of Tacitus, is merely a man of culture, not of genius; his *Letters* show much polish, but are chiefly of value as a description of Roman society in his time. Gaius Suetonius Tranquillus (c. 75-160 A.D.) is the most important prose writer of the 2nd century; but his *Lives of the Twelve Cæsars* is only a collection of court gossip, valuable for its simplicity, its many anecdotes, and the interest of details about personages so universally famous as the early emperors of Rome. A work of no greater literary value is the *Noctes Atticae* of Aulus Gellius (fl. 160 A.D.), which only claims to be read as a collection of extracts from earlier writers and a source of information regarding the studies of the author's age. Juvenal—Decimus Junius Juvenalis—(c. 60-130 A.D.) is a somewhat earlier writer than those just mentioned, but his work may be fitly regarded as the close of original Roman literature. He was the last of the Roman satirists, and the most violent of them all. In his sixteen *Satires* he fully acts up to his own words, 'Indignation inspires my verse.' It is largely to him that the exaggerated belief in the corruption of Roman morale is due: it is forgotten that large cities in every age have had their sinks of moral refuse. After his time Latin writers cease to exhibit the real Roman

character. Towards the end of the second century an entirely new Latin speech comes into being; literary Latin had long ceased to be a spoken language. But the leading writers of the latter part of the second century A.D. endeavoured to return to the spoken language of their day. Their attempt failed, partly because the great classical writers had fixed the standard of Latin speech for all time, but perhaps more because none of them possessed the genius to do great work. Only a brief review of their names can be given here. First comes Marcus Cornelius Fronto (c. 90-168 A.D.), the friend of Marcus Aurelius, and the most famous rhetorician of his time. Only fragments of his works remain, chiefly from private letters, but also from rhetorical exercises, giving a fair idea of the *elocutio novella*, or 'new style,' of which he was the chief advocate. Apuleius (fl. 165 A.D.), a native of Africa, author of the *Metamorphoses*, a romance containing the beautiful tale of Cupid and Psyche, and of some mystical treatises, is a figure of more interest. About the same time was produced an anonymous poem called the *Pervigilium Veneris*, 'the night-long watch of love,' written in trochaic verse with a tendency to accentual rhythm and even to rhyme; it is a work of great charm and romantic feeling. From this time works on Christian theology begin to form a conspicuous part in Latin literature; the names of Tertullian (c. 160-230 A.D.), Minucius Felix (c. 200 A.D.), and Lactantius (c. 300 A.D.) may be particularly mentioned. Historians had almost ceased to exist; the only names to be mentioned are those of the writers of the *Augustan History*, memoirs of the emperors from Hadrian to Numerian—viz. Spartianus, Capitolinus, Galli-

canus, Trebellianus Pollio, Lampridius, and Vopiscus; their feeble conception of history is only excelled by the barrenness of their styles. The last historian of Rome was Ammianus Marcellinus (c. 330-400 A.D.), who wrote a history of Rome from Nerva to the death of Valens, of which only eighteen books, containing the history of the last twenty-five years of his period, are extant. He writes with intelligence and honesty, but—Asiatic by birth as he was—his Latin is obscure and difficult. Contemporary with him were the two last considerable poets of Rome, Ausonius and Claudian. Decimus Magnus Ausonius (c. 310-c. 393 A.D.) was of Gallic blood; he rose to high rank in the state, but spent his last days in retirement near his native Bordeaux. His poems are of many varieties, including Christian hymns; but his best works are his *Idylls*, and the flower of the collection, the '*Mosella*,' is remarkable for its Virgilian rhythm and diction combined with a newer feeling for the beautiful in nature. Claudio Claudianus (fl. c. 400 A.D.) was of Asiatic birth, and lived at Alexandria until he came to the court of Theodosius at Milan. Until then he had written only in Greek—a fact which increases our admiration of the purity of his Latin and the wealth of his vocabulary. His poems consist chiefly of short epics on subjects of the day—e.g. *On the Consulate of Stilicho*—other occasional pieces, and a larger unfinished epic in three books on the *Rape of Proserpine*. Claudian is at least the equal of the poets of the Silver Age, both in learning and in technical skill. He was the last conspicuous author who was a pagan. Prudentius (348-c. 410 A.D.), on the other hand, wrote two books of lyrical poems on Christian subjects with much

brilliance of execution and earnestness of feeling. Sidonius Apollinaris (c. 430-480 A.D.) is a weaker edition of Ausonius. Finally, Boethius (c. 480-524 A.D.) stands at the parting of the ways between the ancient world and the middle ages. He was the last of the learned Romans who knew Greek, and in his philosophical works—mostly translations of and commentaries on Aristotle—he interpreted that philosopher to the Western world. His claim to rank among Latin authors depends on his *Philosophiae Consolatio*, a dialogue, including thirty-nine short poems, of which both prose and verse are excellent in style, while the teaching conveyed in it is a compendium of the loftiest moral teaching of antiquity. It was one of the earliest works to be translated into the modern languages of Europe, and for centuries exercised a greater influence than perhaps any one secular work. After his time the Western empire was broken up into the kingdoms of France, Spain, Britain, and the rest, and there ceased to be any unity in Latin literature.

For further information, see articles on CICERO, HORACE, LIVIUS, TACITUS, and others. See also Teuffel and Schwabe's *Geschichte der Römischen Litteratur* (Eng. trans. by Warr, 1900); C. T. Cruttwell's *History of Roman Literature* (1877); Schanz's *Geschichte der Römischen Litteratur bis zum Gesetzgebung des Kaisers Justinian* (1890-1901); Mackail's *Latin Literature* (1895); Tyrrell's *Latin Poetry* (1895); Sellar's *Poets of the Republic* (1889), *Poets of the Augustan Age* (1891), and *Horace and the Elegiac Poets* (1892); Nettleship's *Essays in Latin Literature*, Series i. (1886), Series ii. (1896); and Wright Duff's *History of Roman Literature* (1909).

Latini, or **LATINO**, BRUNETTO (c. 1212-94), Italian poet and scholar, was born at Florence, in the polities of which city he played a considerable part. The work to which he mainly owed his contemporary fame is *Li Livres dou Trésor*, written in French (ed. by Chabaille, 1863), one of the many encyclopædias so popular in the middle ages. More important for literary history is the shorter *Tesoretto*, composed in Italian, which introduced the allegorical manner of the *Roman de la Rose* into Italy, and served Dante as a model in several ways. See Ortolan's *Etude sur Brunetto Latini* (1873); Sundby's *Della Vita e delle Opere di B. Latini* (1884); and Mantesini's two works on Latini (1887 and 1890).

Latin Union was a monetary union into which France, Belgium, Italy, and Switzerland (and subsequently Greece) entered in 1865 to maintain a uniform and interchangeable coinage among themselves, and to protect their coinage system against the appreciation of silver relatively to gold, due to the gold discoveries in Australia and California. Silver was for the time being withdrawn from circulation. The terms of the convention were modified by subsequent negotiations—notably in 1874, when the states which were members of the Latin Union agreed to suspend the free coinage of silver. The reason for this change of attitude was that after 1872 a fall in silver began which entirely reversed the situation, and made silver depreciate relatively to gold. The Latin Union still exists, but is in practical abeyance.

Latinus, in ancient Roman legend, was king of Latium when Aeneas landed there, and gave him his daughter Lavinia in marriage. See Virgil's *Aeneid*, vii. et seqq.

Latissana, comm., Italy, in Venetia, 22 m. a.s.w. of Udine. Pop. 8,600.

Latitude and Longitude. Latitude is the distance of a place on the earth's surface north or south of the equator, measured in degrees, minutes, and seconds, the equator being represented by 0° . In a degree of latitude there are sixty minutes, each possessing the value of a sea mile. A mile at sea therefore, in its exact (as opposed to its accepted) length, is the same as a minute of latitude. The extremities of the earth's axis, the north and south poles, have a value of 90° . Latitude, otherwise expressed, is the angular distance of a place from the equator, measured on a meridian. The following rules furnish the methods for finding the latitude of a ship by observations of the sun, moon, stars, and planets.

(1.) *From the Sun at Meridian.*—By means of the sextant, the sun's image is brought down to the horizon. The observation is taken three or four minutes before noon of the ship's time, which is approximately corrected by the addition of four minutes for every degree of longitude sailed east, and the subtraction of four minutes for every degree sailed west. When the sun's image is found by observation to have reached a point at which it touches the horizon, without dipping below it, the observer calls out 'eight bells,' and the ship's time is set at noon. Having arrived at the corrected altitude, which is called the true central altitude, subtract it from 90° . The result is the zenith distance north or south, as the case may be. Then observe the corrected declination—i.e. the angular distance of the sun from the equinoctial or celestial equator. If the declination be north or south the same as the zenith distance, add the

two quantities; if they be of different kinds—i.e. one north and the other south—subtract the less from the greater, and the answer will be latitude north or south, according as the greater quantity is the zenith or the declination.

(2.) *From the Sun, ex-Meridian.*—It often happens that the sun at the exact meridian is obscured by a cloud. There are tables, known as Bowditch's *Useful Tables*, by which the variation of the sun's altitude may be found for thirteen minutes of time on each side of the meridian; but the rules for finding the sun's altitude at the meridian by an observation of it at a different time are known to every competent navigator.

(3.) *From the Moon or a Planet.*—The method is the same. Meridians, altitudes, zenith distances, and declinations are worked out with reference to Greenwich time, and the principles for determining latitude are as before.

(4.) *From the Stars.*—The quickest and easiest method of determining latitude is from the stars. They are more constant, and declination is almost absent. The few variations which exist are noted in the *Nautical Almanac*. Star tables are worked out for all stars of the first magnitude in both hemispheres, and for all navigation stars of the second and third magnitudes, with the astronomical apparent times at which they cross the observer's meridian on the first day of each month in the year. Observations should be taken both north and south for verification.

(5.) *From the Pole Star at any Hour.*—The method is to observe the true altitude of the star; to obtain the local apparent time from the ship's chronometer by adding or subtracting four minutes for each degree of longitude sailed east or west; to convert this time into astronomical time

—i.e. counting up to 24 hours from noon; and having got the true altitude and the astronomical time, to obtain the sun's right ascension (which is the distance of the sun, considered in time, from its position at the vernal equinox) from the *Nautical Almanac* for the day. Add the astronomical time and the sun's right ascension. If the result exceeds 24, then subtract 24. Apply this result of hours and minutes to the table of Pole-star corrections, and find the number of degrees and minutes opposite to it with a minus or plus sign. Add this to, or subtract it from, the true altitude already found, and the result is the latitude.

(6.) *From an Artificial Horizon.* —This is a method sometimes used on shore. It necessitates the employment of a small trough filled with quicksilver (or of a pan of treacle or liquid tar, failing anything better). The surface is protected by glass from the wind, so that it is smooth enough to show reflections. Face the celestial body it is desired to observe, and walk backwards until its reflection is seen in the quicksilver. Apply the sextant to the celestial body, and bring its image down so as to coincide with the other image in the trough. The angle shown on the sextant will be double the altitude of the body. Having found the altitude by this means, proceed as usual by the *Nautical Almanac* or other calculations.

Longitude is the distance of any place on the globe's surface from another place, eastward or westward, or, more exactly, the distance of any place from a given meridian, being the arc of the equator intercepted between the meridian of that place and some other fixed meridian, the one from which longitude is reckoned being usually termed the *first meridian*. In Britain longi-

tudes are generally reckoned from the meridian of Greenwich. The determination of the longitude of any place is effected by arriving, in the first place, at the 'time' of the place the longitude of which is desired to be ascertained, also the 'time' of the first meridian, which, on being reduced to degrees, affords the longitude.

See *The Nautical Almanac* (annually, several years in advance); Roper's *Practice of Navigation*; Martin's *Navigation and Naval Astronomy*; Inman's *Nautical Tables*; Bowditch's *Useful Tables*; Lecky's *Wrinkles in Practical Navigation* (1881); Gill's *Text-Book on Navigation* (1898); and Norie's *Epitome of Practical Navigation*.

Latitudinarians, a name given to a party in the Church of England in the 17th century who strove to find a theological basis broad enough for men of different views to unite upon, and thus to put an end to the embittered controversies of the time. Their chief representatives were Hales, Chillingworth, Henry More, Cudworth, Whicheote, and Tillotson, and the movement was closely allied to the philosophical school known as the 'Cambridge Platonists.' The Latitudinarians may be regarded as the forerunners of the Broad Church. See Tulloch's *Rational Theology in England in the 17th Century* (1872).

Latium, div. of ancient Italy, bounded on the N. by the Tiber, on the E. by the highlands of Central Italy, on the S. by the Liria, and on the W. by the Mediterranean. Most of the country consists of a plain of volcanic origin, in the middle of which rises the Alban Mount. At an early date the Latin cities formed a confederation, the head of which was Alba Longa. Rome was originally a colony from Alba, but at an early date de-

stroyed that city, and afterwards became head of the Latin league. See Mommsen's *History of Rome* (1894).

Latona. See LETO.

La Tour d'Auvergne, THÉOPHILE MALO CORRET DE (1743-1800), French captain of grenadiers, born at Carhaix, Brittany; distinguished himself at the siege of Port Mahon (1780), also during the wars of 1792-1800. Napoleon named him 'Le premier Grenadier de France.' He was killed at Oberhausen, near Neuburg, Bavaria. He wrote several works on the language and antiquities of the Bretons. See Simond's *Life* (ed. 1899).

La Trappe. See TRAPPISTS.

Latreille, PIERRE ANDRÉ (1762-1833), French naturalist, was born at Brives. He was an accomplished entomologist, and arranged the insects in the Museum of Natural History at Paris, and was subsequently professor of natural history there. His most important work is *Précis des Caractères Génériques des Insectes* (1796), but he also wrote on various groups of the animal kingdom.

Latrobe, tn., Westmoreland co., Pennsylvania, U.S.A., 40 m. E.S.E. of Pittsburg; has collieries and steel works. Pop. (1910) 8,777.

Latton (Old Fr. *laton*, 'brass'), a name given to the sepulchral tables of brass extensively used for centuries in churches to commemorate the dead. Fine examples are to be seen in the gates to the chapel of Henry VII. in Westminster, and on his tomb-screen.

Latter-day Saints. See MORMON CHURCH OF LATTER-DAY SAINTS.

Lattice Leaf, the popular name of a water plant, *Ouvirandra fenestrata*, belonging to the order Juncaginaceæ. The leaves are of open structure, are

nearly a foot long, oblong in shape, and float just below the surface of the water. The flowers are borne in spikes on the surface. The roots are used as food by the natives of Madagascar.

Lauban, tn., Prussian prov. Silesia, 13 m. E. by s. of Görlitz. Industries: tobacco, linen, woolen, cotton, and dye works, railway workshops, and brewing. Pop. (1910) 15,467.

Laube, HEINRICH (1806-84), German novelist and playwright, early showed revolutionary sympathies, which led to his imprisonment (1834); was the successful director of the Burgtheater (1849-67) and the Stadttheater (1870-79) at Vienna. His plays are of considerable merit, but it is through his novels, which include *Das junge Europa* (1833-7), *Der Prätendent* (1842), and *Die Böhmlinge* (1880), that he is chiefly remembered. A selection of his works, in German, appeared in 1906.

Laud, WILLIAM (1573-1645), archbishop of Canterbury, the son of a clothier, was born at Reading. Educated at St. John's College, Oxford, he took holy orders in 1600. His ecclesiastical advancement was rapid, and in 1611 he was elected president of St. John's College. In 1614 he received a prebend in Lincoln Cathedral, in 1615 became archdeacon of Huntingdon, and in 1616 dean of Gloucester. In 1621 Laud received the bishopric of St. Davids. During his tenure of the Welsh see his friendship with Buckingham began, and visits to the court became more frequent. From 1622 he was involved in political life. On the death of James I. Laud speedily secured the confidence of Charles, and was one of his advisers during the stormy period from 1625 to 1629. In 1626 he was made bishop of Bath and Wells, and two months later became dean of the

Chapel Royal. From this time the religious policy of Charles I. was guided by Laud. The reformation of the church was the object of his heart. Supported by Charles, he compelled all the bishops to retire to their sees; he also carried out many valuable reforms in the University of Oxford. In August 1633 he was appointed archbishop of Canterbury, and was able to continue his policy of reform, with the result that the fabrics of churches were everywhere improved. His attempt to introduce a service book and canons into the Scottish Church was a decided failure, and drove the Presbyterians into opposition to the crown. The opening of the Long Parliament in 1640 was shortly followed by the imprisonment of Laud and Strafford. In 1643 Laud was tried for endeavouring (1) to 'alter the Protestant religion into Popery,' and (2) 'to subvert the laws of the kingdom.' No adequate proofs could be produced; but a bill of attainder was passed against him on Jan. 4, 1645, and a few days later he was beheaded. See Heylin's *Cyprianus Anglicanus* (1668); Hutton's *William Laud* (1895); Simpkinson's *Life and Times of Laud* (1894); and Bell's *Archbishop Laud and Priestly Government* (1907).

Lauda, the name given to early Italian religious and spiritual songs, which date from the 13th century. The chief writer of the genre at this early stage was Jacopone da Todi. The pieces gradually became more and more dramatic, and played an important part in the development of the Italian drama. They were produced in large numbers till well into the 15th century. See Galletti's *Laude spirituali di Belcari, L. de' Medici* (1863); D'Ancona's *Origini del Teatro Ital.* (1891); and *Rappresenta-*

zioni sacre dei Sec. XIV., XV., e XVI. (1872); Torrasa's *Teatro dei Sec. XIII., XIV., XV.* (1885).

Laudanum, or **TINCTURE OF OPIUM**, is an alcoholic extract, prepared by rubbing opium up with water, adding alcohol, and straining off the liquid portion. The weight of morphin in a given volume is next determined, and the solution diluted so as to contain 75 gram per 100 cc. Laudanum is a brown-coloured liquid, which is valuable medicinally on account of the morphine present. See **MORPHIA** and **OPIUM**.

Lauder, roy. bur., Berwickshire, Scotland, on the Leader, 23 m. s.e. of Edinburgh. Lauder Bridge was the scene of the execution of the favourites of James III. of Scotland by Archibald Douglas ('Bell-the-Cat') and the nobles (1483). Pop. (1911) 659.

Lauder, HARRY (1870), Scottish vocalist and comedian, who has attained unprecedented success on the music hall stage, was born at Portobello. For ten years he was a miner, but studied music in his leisure, and became a popular amateur vocalist. Later, he adopted the stage as his profession, and an engagement at the London Pavilion made him famous. He visited the United States in 1907, in 1908, and again in 1909, where he gained enormous popularity. In September 1908 he was commanded to appear before King Edward VII. at Rufford Abbey.

Lauder, ROBERT SCOTT (1803-69), Scottish portrait painter, was born near Edinburgh; studied in London and Italy, and returned to Edinburgh in 1849. His best-known works are *Christ Teacheth Humility* and *Trial of Effie Deans*. Examples of his work are in the Scottish National Gallery.

Lauder, SIR THOMAS DICK (1784-1848), Scottish author, was born at Fountainhall, Hadding-

tonshire. Endowed with most versatile talents, he was alike eminent in many fields. Among his publications are his classic paper, *The Parallel Roads of Glenroy* (1818); *Account of the Great Moray Floods of 1829* (1830); 'Scottish Rivers,' in Tait's Mag. (1847-9); *Tour Round the Coast of Scotland* (1842); and his romance, *The Wolf of Badenoch* (1827).

Lauder, WILLIAM (c. 1680-1771), Scottish literary forger, was the author of *Poetarum Scotorum Musæ Sacrae* (1739) and other compilations. He attacked the literary and poetical status and good faith of Milton, and issued garbled extracts from Massenus and Staphoristius, which he asserted Milton had plagiarized in *Paradise Lost*. He was exposed by Douglas, afterwards bishop of Salisbury.

Lauderdale, JOHN MAITLAND, FIRST DUKE OF (1616-82), born at Lethington, Haddingtonshire, eldest surviving son of the first Earl of Lauderdale. At first a zealous Covenanter, he was appointed one of the commissioners of the General Assembly of the Church of Scotland to the Assembly of Divines at Westminster (1643). After the surrender of the king to the English he became a strenuous loyalist, and was one of the chief promoters of the 'engagement' for his rescue. He was one of those sent by the Committee of the Estates to invite Charles II. to return to Scotland, and accompanied him thither in 1650. Taken prisoner at the battle of Worcester (1651), he was not released until Monck's entry into London (1660). Later he went to Breda, where he entered into communication with Charles II., over whom he gained a remarkable influence, and by whom, on the restoration, he was made secretary of state for Scotland. The severity of his administration against the Covenanters

earned him the hatred of the Scottish people. Created Duke of Lauderdale and Marquis of March (1672), he was two years later made an English peer under the title Earl of Guildford and Baron Petersham. After the visit of the Duke of York to Scotland (1680) his influence declined, and in October of that year he resigned. See *Lauderdale Papers*, published by the Camden Society (3 vols. 1884-5).

Laudon, or LOUDON, GIDEON ERNST, FREIHERR VON (1717-90), Austrian field-marshal, born at Tootzen, Livonia, was for ten years in the Russian service, but exchanged into that of Austria (1742). He displayed great talent during the Seven Years' war, the victories of Hochkirch, Kunersdorf, Landeshut, and Glatz being mainly due to his ability. Laudon again commanded during the war of the Bavarian Succession (1778), and in the Turkish war (1788-9), when he captured Belgrade. See Janko's *Das Leben G. E. Laudon* (1869), and Malleson's *Life of Laudon* (1884).

Lauds. See BREVIARY.

Lauenburg. (1.) A circle, prov. Schleswig-Holstein, Prussia, with area of 453 sq. m., and pop. of 53,000. Well forested, with many lakes; agriculture and cattle-raising are the chief industries. Chief tns. Ratzeburg and Lauenburg. It was formerly a duchy belonging with Holstein to Denmark, but in 1863 became part of Prussia. (2.) Town on the Elbe, 25 m. s.e. of Hamburg: former capital of the duchy. Pop. (1910) 5,009. (3.) Town, prov. Pomerania, Prussia, on the Leba, 38 m. w.n.w. of Danzig. Manufactures woollens, linen, leather, machinery, and matches. Pop. (1910) 13,847.

Laughing Gas. See NITROGEN.

Laughing Jackass, or SETTLER'S CLOCK (*Dacelo gigas*), a

very large kingfisher found in Australia, where it receives its popular names from the peculiar gurgling cry uttered with great regularity at dawn and dusk. It is one of the wood kingfishers, the food consisting of reptiles, birds, insects, and even small mammals. The name is also applied to other species of the same genus found in Australia and New Guinea, and possessing similar habits. The colouring is not brilliant, consisting of a mixture of brown, black, and white, but the male has the lower part of the back of a greenish-blue colour. See KINGFISHERS.

Laughton, Sir John Knox (1830), English nautical writer, born at Liverpool; became secretary of the Navy Records Society. In 1885 he was elected professor of modern history, King's College, London. His works include *A Treatise on Nautical Surveying* (1872); *Nelson* (1895); *Memoirs of Henry Reeve* (1898); *From Howard to Nelson* (1899); *Nelson and his Companions in Arms* (1905); *The Barham Papers* (2 vols., 1907-9). He was knighted in 1907.

Laun, tn., Bohemia, Austria, at the s. foot of the Erzgebirge, 35 m. N.W. of Prague, on the riv. Eger. Produces sugar and iron goods. Pop. (1911) 11,484.

Launce. See SAND-LAUNCE.

Launceston. (1.) Munic. bor., Cornwall, England, 22 m. N.W. of Plymouth. During the civil war Launceston was alternately held by parliamentarians and royalists. Pop. (1911) 4,117. (2.) Principal town of the north of Tasmania, situated at the confluence of the North and South Esk rivers. It is the commercial, official, and judicial capital of the north, and its commerce is larger than that of Hobart. Pop. 21,200; with suburbs, 27,000.

Laundries. Mechanical contrivances to save labour and secure greater efficiency in the process

of washing are very ancient, the washing slab, whether of plain or corrugated wood or of stone, and the wooden mallet-beater or other scrubbing implement, being found in all countries. A modification of this is the dolly, which, in its most simple form, is a wooden rod having a series of spokes at its lower end and a cross-bar handle at the upper one. Such a dolly is used to beat and rub clothes when placed in soap-suds in a tub, the implement being revolved by hand. This dolly ultimately was fixed in the tub, the lower end shod with a metal point fitting into a groove, while the head was fixed to a horizontal beam supported by uprights, and the dolly was made to revolve by means of cog-wheels set in motion by a hand-wheel. Another mechanical improvement is represented by the automatic steam-flow washing machine, which consists of a metal receptacle, provided with a false bottom, to which a metal coiled tube is fixed, both being pierced. Clothes are packed loosely round the contrivance, soapy water is added, and the receptacle placed over the fire. As soon as the lower strata of water becomes heated it rises, and gradually steam is evolved, escaping upwards through the perforated coil. In this way a constant and violent circulation of the hot and soapy water is kept up, and the linen is subjected to the dual action of mechanical friction and chemical solvents (steam and alkalis). The next stage was to combine the action of steam and rotary beaters, and this has resulted in the introduction of a large variety of steam washing machines.

There are three principal types, viz.:—(1.) *The tub and dolly.* In this the tub is made steam-tight, the dolly is rotated by steam power, and steam is conveyed into the tub in order to heat (or

boil) the water. (2.) *The treading machine*, consisting of a trough, over which is a horizontal beam supporting a number of vertical stampers, which are raised and depressed alternately by means of steam power. This machine imitates the process of foot treading. (3.) *Rotary washers*. The best type of rotary consists of an outer cylinder of wood or metal, inside which a cage (composed of metal bars or perforated sheets of metal or staves of wood) is hung either on special bearings or on a spindle running right through the machine. The machine being packed with clothes (about one-fourth full), cold and hot water are run in, and soap, melted to a jelly, is added. The doors are then closed, and the machine is set in motion. At the same time steam is admitted, and in this way the water may be brought to the boiling-point. Meanwhile the machine revolves at a great rate, first from right to left, and then from left to right. In some machines the cage, by means of eccentric gearing, is given a rocking as well as a rotatory motion. There are also endless varieties in the construction of the cages.

While washing machines were being improved, equal attention was being bestowed on ironing appliances. The box mangle suggested the large ironers with metal beds and revolving rollers. In the Decoudun type there is a polished steel concave bed or chamber, heated by steam or gas, and blanket-covered roller. The linen is dragged through by means of the flannel-covered roller, and is polished on the heated bed. In other cases there are a number of rollers revolving in a set of grooves in the steam-heated bed. Many of these machines are ten or twelve feet in length. Smaller machines are made for ironing collars and small articles, and

some are ingeniously contrived so as to iron shirts and skirts.

Body and table linen is usually placed immediately into the washing machines. After washing and rinsing, the linen is removed to the hydro extractors. These are rotary cages, like round baskets, into which linen is packed, the moisture being removed by centrifugal force as the cage revolves horizontally by means of a steam-driven belt. The hydro extractor is safer than a roller wringing machine. From the hydro extractors the linen is removed to the drying ground, or, if dispatch is necessary or the weather rainy, to drying closets, usually built like closets, with a series of horses fitting into them, and heated by waste steam or hot air. From the drying closet or grounds the linen is removed to the ironing room, where it is starched, and then passed on to the mangle, large Decoudun or similar machine, to the collar-ironing machines, and so on. Hand-ironing for collars and shirts is still very general even in large steam laundries.

La Union, tn., Spain, prov. of Murcia, 6 m. E. of Cartagena; has large mines of iron, manganese, calamine, sulphur, and lead. Pop. 30,000.

Laura (Gr. *labra*, 'lane,' 'passage,' 'alley'), one of the features in the primitive practice of monastic seclusion in the East. The ascetic mode of life, with its habits of solitude, more or less extreme, was associated with habitation in an assemblage of monastic cells or huts, which preserved the common life of communities, and were the prototype of the more complex monasteries themselves.

Laurahütte, tn., Silesia, Prussia, 7 m. S.E. of Beuthen; has coal mines and iron, zinc, and cement works. Pop. (1910) 16,118.

Laureate. See POET LAUREATE.

Laurel, or sweet bay tree, a well-known evergreen shrub, belonging to the genus *Laurus*. It is characterized by its long, lanceolate, shiny leaves, and by a characteristic aroma yielded by all parts of the plant when crushed. It bears small yellowish flowers, and these are followed by dark purple berries.

Laurel, tn., Jones co., Mississippi, U.S.A., 26 m. N. by E. of Hattiesburg. Pop. (1910) 8,465.

Laurelia, a genus of trees belonging to the order Monimiaceae. One species, *L. Norae-Zelandiae*, is a native of New Zealand, and reaches a height of 150 ft. The only other species is a native of Chile. Both have aromatic leaves, resembling bay leaves in scent.

Laurence. See LAWRENCE.

Laurence, SAMUEL (1812-84), English portrait painter, was born at Guildford, Surrey. He first exhibited at the Royal Academy in 1836. Among his portraits are those of Tennyson, Dickens, Carlyle, Browning, Lowell, Mrs. Somerville, and Spottiswoode. The National Portrait Gallery, Trinity College, Cambridge, and the Reform Club contain examples of his art.

Laurencekirk, mrkt.-tn., Kincardineshire, Scotland, 26 m. s.s.w. of Aberdeen. Pop. (1911) 1,438.

Laurent, AUGUSTE (1807-53), French chemist, was born near Langres, and studied under Dumas, afterwards becoming (1838) professor of chemistry at Bordeaux and warden of the mint (1848) in Paris. He worked almost exclusively at organic chemistry, and is chiefly notable for his work in conjunction with Gerhardt in grafting the theory of 'radicals' on to that of 'types,' and thus leading to a clearer

understanding of the constitution of organic compounds.

Laurentia, a genus of half-hardy, herbaceous plants, belonging to the order Campanulaceæ. They are small plants of fragile habit. The chief species is *L. erinoides*, a S. African native, bearing purple and yellow flowers.

Laurentian System. See ARCHEAN SYSTEM.

Laurentum, anc. cap. of Latium, Italy, near the coast, 16 m. s.w. of Rome. Under Trajan, Laurentum and the neighbouring town of Lavinium were recolonized and united under the name of Lauro-Lavinium.

Lauria, city, Potenza prov., Basilicata, Italy, 42 m. s. of Potenza; manufactures woollens, linen, and leather. Ruggiero di Loria, the great Italian admiral, was a native. Pop. 10,000.

Laurier, SIR WILFRID (1841). Canadian statesman, was born at St. Lin, Quebec, and educated at L'Assumption College and at M'Gill University. He studied law, and was called to the bar in 1864. He turned early to politics, entering first the Quebec Legislature in 1871, and the Dominion House of Commons in 1874. His splendid gift of oratory gave him an immediate position in federal politics, and he had the gift and the distinction of speaking equally well in both French and English. He entered the Liberal Mackenzie ministry in 1877, but at the ensuing general election in 1878 was defeated. He was, however, returned for the city of Quebec, which has remained faithful to him, giving him at each election increasing majorities. In 1891 he was elected leader of the Liberal party. In 1896 he became prime minister, the first French-Canadian to hold that position. His tenure of that office was marked at the start by the inauguration of preferential tariff

in 1897; and his policy, while assisting to develop the resources of Canada, and to promote its peace and prosperity, has had a marked imperialist tendency. His government was sustained at the general election in 1900, and again in 1904 and 1908. See Willison's *Sir W. Laurier and the Liberal Party* (1903).

Laurinaceæ, a natural order of herbs, shrubs, and trees, mostly tropical in habitat, and mostly possessing marked aromatic properties. They bear evergreen, coriaceous leaves and small greenish flowers. Among the genera are Laurus, Cinnamomum, Camphora, and Sassafras.

Lauriston, JACQUES ALEXANDRE BERNARD LAW, MARQUIS DE (1768-1828), French general, born at Pondichery; was the contemporary of Napoleon, with whom he was associated in his military operations, and commanded the rearguard in the retreat from Moscow. After the second restoration he tendered his allegiance to Louis XVIII., and received an army appointment, eventually becoming a marshal of France (1821).

Laurium (Gr. *Laureion*). (1.) Mountain at the extreme s. end of Attica, in ancient Greece. It was famous for its silver mines, which, however, became exhausted before the Christian era; but since 1873 mining (lead, iron, zinc, cadmium, and manganese) has begun again in the district. In 1910 minerals and metallic lead were exported to the value of £508,684. The mines are connected by rail with Athens through the port of Laurium or Ergosteria (pop. 12,000), where there are smelting furnaces. See Bursian's *Geographie d. Griechenland*. For the mines, see Ardaillon's *Les Mines du Laurion dans l'Antiquité* (1897). (2.) Tn., Houghton co., Michigan, U.S.A., on Mineral Range and the Copper

Range Rys., 42 m. n. of L'Anse; contains one of the richest copper mines (Calumet and Hecla) in the world, yielding from 10,000 to 20,000 tons annually. Pop. (1910) 8,537.

Laurustinus (*Viburnum Tinus*) is an evergreen shrub belonging to the order Caprifoliaceæ. It is a native of S. Europe. It bears entire ovate leaves, and, through the winter months, flat corymbs of white flowers, slightly tinged with pink. The fruit is a dark-blue drupe. Several varieties are cultivated.

Laurvik, or **LARVIK**, seapt., Jarlsberg-Laurvik prov., Norway, on the fiord of the same name, 66 m. s.s.w. of Christiania. Industries include shipbuilding and glass-works. Exports timber, ice, wood-pulp, and granite. Laurviks Bad is a favourite spa, with mineral and sulphur springs and mud-baths. Pop. (1910) 10,151.

Lausanne, tn., cap. of Canton Vaud, Switzerland, built on the slopes of the Jorat range, and on the N. shore of the Lake of Geneva; the seat of the federal court of justice. Its cathedral church is perhaps the finest medieval building in Switzerland. It has a university (over 700 students), a school of agriculture, military and other schools, and numerous private schools, which attract to Lausanne many pupils from foreign countries. Manufactures machinery, tobacco, and chocolate, and has large vineyards. It is a great resort of tourists. Pop. (1910) 63,926. See *Lausanne*, by J. H. and M. H. Lewis, and F. Gribble (1909).

Lausitz. See *LUSATIA*.

Lauterbrunnen, tourist resort in the Bernese Oberland, Switzerland, 6 m. s.e. of Interlaken, in the deep and picturesque valley of the White Lütschine. A mountain railway connects it with Grindelwald by the Wengernalp, and a funicular and electric rail-

way ascends to Mürren. Pop. 2,600.

Lava. The molten rock which exists within or beneath active volcanoes is often forced up to the surface during an eruption, and may be seen within the crater. The temperature of lava probably ranges from 1200° to 2000° C., and in some cases its liquidity is so great that the molten rock forms a fountain rising in the air. According to their chemical composition, and the minerals which crystallize out of the lavas when they cool, they have been subdivided into many classes, such as rhyolites, trachytes, phonolites, andesites, basalts, tephrites; but for a description of these the reader is referred to works on petrology, such as Hatch's (1909), Harker's (1908), and Toal's (1888); also Judd's *Volcanoes* (1881).

Lavadores, tn., Spain, in Galicia, prov. of Pontevedro, on the coast close to Vigo. Pop. 15,000.

Lavagna, seapt. in Genoa prov., Italy, 23 m. E.S.E. of Genoa; has slate and marble quarries. Pop. (comm.) 7,000.

Laval, cap. of the dep. Mayenne, France, on the Mayenne, 155 m. w.s.w. of Paris. Manufactures 'ticking', cotton goods, paper, leather, and machinery. Has marble quarries. Pop. 30,000.

La Valetta. See VALETTA.

La Vallière, FRANÇOISE LOUISE DE LABAUME LE BLANC, DUCHESSE DE (1644-1710), mistress of Louis XIV., born at Tours, of old and honourable descent. The advent of Madame de Montespan caused her to retire to a Carinelito convent, where she died. She wrote *Réflexions sur la Miséricorde de Dieu par une Dame pénitente* (1680). See *Lives* by Houssaye (1860), and Lair (Eng. tr. 1908).

Laval-Montmorency, FRANÇOIS XAVIER DE (1822-1708), French-Canadian pioneer, was

born at Laval, France. In 1659 he was sent to Canada as vicar of the Pope, where in 1663 he established the Seminary of Quebec. From 1674 to 1683 he was titular bishop of Quebec. He afterwards resigned, and devoted himself to the advancement of the seminary.

Laval University, a French Catholic university established in 1852 at Quebec, Canada, and maintained by the Quebec Seminary. There are faculties of theology, law, medicine, and arts, and the usual bachelor's, master's, and doctor's degrees are conferred. The students number about 400, and there is a library of 150,000 volumes. In 1876, by Papal bull, the university received an extended constitution. It is under the control of a council composed of the archbishop and bishops of the province of Quebec. Its extension work is carried on by affiliated seminaries throughout the province, and through a branch at Montreal.

Lavater, JOHANN KASPAR (1741-1801), Protestant minister and writer on physiognomy, was born at Zürich. Ordained in 1762, he subsequently became minister of the church of St. Peter. Having published a collection of Swiss songs (1767), he was next engaged on a treatise entitled *Aussicht in die Ewigkeit* (1768-78). Afterwards he devoted himself to physiognomy, which he endeavoured to make scientific by means of his famous work on the subject, *Physiognomische Fragmente zur Beförderung der Menschenkenntniss und Menschenliebe* (1775-8). See *Lives* by Bodemann (1877), Muncker (1883), and Hofhaus (1888).

Lavatera, a genus of herbaceous and shrubby plants belonging to the order Malvaceæ. The principal species with horticultural interest are the annual *L. trimestris*, with rosy flowers, and its variety *alba*; the bien-

Lava Flow on Mount Vesuvius.



nial shrub *L. arborea*, with downy leaves and pale purplish flowers; and *L. olbia*, the tree lavatera, a perennial shrub with hairy leaves and solitary, short-stalked red flowers.

Lavaur, tn., dep. Tarn, France, on the Agout, 20 m. E.N.E. of Toulouse; has a 14th-century cathedral, and manufactures silk. Pop. 6,400.

Laveleye, EMILE LOUIS VICTOR, BARON DE (1822-92), political economist, was born at Bruges, and became professor of political economy at Liège in 1864. He contributed many articles to the *Nineteenth Century*, *Revue des Deux Mondes*, and other periodicals, and was the author of *De la Propriété et de ses Formes Primatives* (4th ed. 1891; Eng. trans. 1878), *Éléments d'Economie Politique* (4th ed. 1893), and *Les Lois Naturelles et l'Objet de l'Economie Politique* (1883). See *Life by Goblet d'Alviellas* (1895).

Lavello, tn., Italy, in Basilicata, prov. of and 30 m. N. of Potenza. Pop. 7,500.

Lavender, a hardy perennial herb, *Larandula vera*, valued for its fragrant flowers, which retain their scent for a long period if carefully gathered and dried. It has ever-gray leaves, narrow and entire, and in summer bears interrupted spikes of bluish labiate flowers arranged in whorls. It is a native of Southern Europe. The chief counties in England in which lavender is grown on a large scale are Surrey and Hertfordshire.

Lavender Cotton, a beautiful little herbaceous plant, *Santolina Chamæcyparissus*, with very quaint, finely-cut gray leaves, and yellow flower-heads in late summer.

Laver, a brazen vessel in the Hebrew tabernacle, in which the priests cleansed their hands and feet in preparation for the sacrifices.

Laver, seaweed belonging to the genera *Ulva* and *Porphyra*, occurring on the British coasts. It is used for food after being well boiled.

Lavery, JOHN (1857), portrait painter of the Glasgow school, born at Belfast; studied in Paris from 1881, and in 1883 his *Two Fishers* was hung in the New Salon. His *Tennis Party* (Munich Pinakotek) was exhibited in the Royal Academy in 1887, while *The Visit of Queen Victoria to the Glasgow Exhibition* (1888) is in the Glasgow Gallery. Other notable pictures are *Mother and Son*, *White Feathers*, *A Lady in Black*, and many portraits.

La Villemarqué, THÉODORE CLAUDE HENRI HERBART, VICOMTE DE (1815-95), Celtic archaeologist and philologist, born at Quimperlé, and studied at Paris. A prolific writer on Breton poetry, history, and literature, his *Barzaz-Breiz* (1839; Eng. trans. 1865) was the outcome of long-continued research. He was also editor of the *Dictionnaire Français-Breton* (1857); and wrote *Contes Populaires des Anciens Bretons* (1842), *Poèmes des Bardes Bretons* (1850), and *Poèmes Bretons du Moyen-Age* (1897).

Lavinia, in Roman legend, the daughter of Latinus and Amata, and wife of Aeneas. See Virgil's *Aeneid*, vii.

Lavinium, anc. tn. of Latium, Italy, on the Appian Way, 15 m. S.E. of Rome, and near Laurentum, with which it was joined by the Emperor Trajan to form Lauro-Lavinium. The site is occupied by the modern Pratica.

Lavisse, ERNEST (1842), French historian, born at Nouvion-en-Thiérache (dep. Aisne). After some years of teaching in lycées, he became professor of modern history at the Sorbonne (1888), and a member of the Academy (1892). His chief works are

Etudes sur l'Histoire de Prusse (1879), *Essais sur l'Allemagne Impériale* (1887), *La Jeunesse du Grand Frédéric* (1891), *Trois Empereurs d'Allemagne* (1888), and *Histoire de France* (1900, etc.). With A. Rambaud he edited *Histoire Générale du XVe Siècle à nos Jours* (12 vols. 1893-1901).

Lavoisier, ANTOINE LAURENT (1743-94), French chemist, was born in Paris, and studied chemistry under Rouelle. He early devoted his attention to research, and was elected at the age of twenty-five a member of the Académie des Sciences. His principal work lay in developing the true explanation of the phenomena of calcination and burning, and he formulated the theory of the conservation of mass upon which all modern chemistry rests. He also had a great part in devising the basis of the present system of chemical nomenclature. In his position of *fermier-général* he fell under suspicion during the reign of terror, and perished by the guillotine. His most important works are *Traité Élémentaire de Chimie* (1789) and *Mémoires de Chimie* (1805). His complete works were published by the French government (1864-93). See his *Life* by Grimaux (1888), and Thorpe's *Essays in Historical Chemistry* (1894).

Lavos, tn. in Coimbra dist., Beira, Portugal, on the Mondego, 23 m. w.s.w. of Coimbra; was the landing-place of British forces during the Peninsular war. Pop. 8,000.

Lavradia, a genus of Brazilian shrubs belonging to the order Violariaceæ. The only species commonly grown in this country is *L. montana*, a stove plant.

Law. See JURISPRUDENCE.

Law (scientific). By a 'law' in the natural and social sciences is meant a generalized statement regarding the connection of phenomena by way of coexistence or

sequence. If the uniformity is merely affirmed as a fact of experience without its conditions being determined, the generalization is termed an 'empirical law.' With the progress of science, a belief in the universality of law has been more and more impressed upon modern thought; but with the wider diffusion and popularization of the scientific mode of thought, there have been associated popular misconceptions of the nature and meaning of a law. One of these is the notion of laws, or at least the way of speaking about laws, as if they were actual existences or forces in themselves. In the case of social (e.g. economic) laws the error is serious, because the modes of action described in economic laws are not the invariable operations of nature, but the activities of man, which are capable of being modified by the forces of legal enactment and opinion. See Mill's *Logic*, bk. iii.; also the Duke of Argyll's *Reign of Law* (19th ed. 1890).

Law, ANDREW BONAR (1858), politician, born at New Brunswick, has been for many years a leading figure in the iron trade in the west of Scotland. Latterly he has devoted himself to politics, and has come prominently before the British public as a powerful advocate of tariff reform. He was Unionist M.P. for the Blackfriars Division of Glasgow (1900-6), the Dulwich Division of Camberwell (1906-10), and a division of Liverpool since 1910. He was parliamentary secretary of the Board of Trade (1902-6), and is chairman of Glasgow Iron Trade Association.

Law, EDWARD. See ELLENBOROUGH, BARON.

Law, JOHN, 'of Lauriston' (1671 - 1729), originator of the Mississippi Scheme, was born at Edinburgh. Over a duel in which he killed his opponent Law fled

to the Continent, and finally settled in Paris. Here he began a private bank (1716), and in 1718 induced the Regent Orleans to adopt his suggestion for a national bank. His disastrous scheme for settling lands in the Mississippi valley was started in 1719. Law died in poverty at Venice. See *MISSISSIPPI SCHEME*, and *Life* by Wood (1824) and by Wiston-Glynn (1908).

Law, THOMAS GRAVES (1838-1904), Scottish historian, was educated at Stoneyhurst after his father's conversion to Romanism. Under the influence of Faber and Newman he joined the Oratorians, but severed his connection with the Church of Rome in 1878. Shortly after, he was appointed librarian of the Signet Library in Edinburgh, where he also became secretary of the Scottish History Society. In addition to editing many volumes of the publications of the society, he wrote valuable essays. See his *Collected Essays and Reviews* (1904).

Law, WILLIAM (1686-1761), English mystic, nonjuring divine, and controversialist, was born at King's Cliffe, Northamptonshire. He entered Emmanuel College, Cambridge, as a sizar, in 1705; gained a fellowship in 1711, and in the following year took orders. He continued at Cambridge, teaching and occasionally preaching, till the accession of George I. in 1714, when, in accordance with his strong Jacobite leanings, he refused to take the oath of allegiance, and at once lost his fellowship and all chance of ecclesiastical preferment. About 1727 he became private tutor to Edward Gibbon, the historian's father, proceeding with his pupil to Cambridge, where he stayed for about four years, and thereafter returned to Putney, to act as the esteemed confidential adviser of the Gibbon family, and

as the spiritual guide of a group of young men, including the Wesleys and Byron, the poet. These pleasant conditions were disturbed by the death of his patron in 1737, and in 1740 Law returned to King's Cliffe, where he had a small inheritance. His literary activity, extending from 1717, the date of his *Three Letters to the Bishop of Bangor* (Hoadley), till the year of his death, placed him among religious classic writers. His controversial works include *Remarks on a late Book entitled 'The Fable of the Bees'* (1724), and *The Case of Reason* (1732), in which he deals most effectively with Mandeville and Tyndall respectively; but his most outstanding works are his *Practical Treatise on Christian Perfection* (1726), and *A Serious Call to a Devout and Holy Life* (1729). His first acquaintance with the writings of Jakob Boehme, about 1734, marks an era in his spiritual and literary history; from that time he stood under the influence of mysticism, and issued many works, e.g. *The Spirit of Prayer* (1749) and *The Spirit of Love* (1752), which rank high in the literature of that school. See his *Collected Works* (9 vols. 1762), privately reprinted, with 'Memoir' by G. B. Moreton, 1892; Overton's *William Law, Nonjuror and Mystic* (1881); and Whyte's *Characters and Characteristics of William Law* (1893).

Law Agent. The Law Agents (Scotland) Act, 1873, defines a law agent as including writers to the signet, solicitors in the supreme courts, procurators in any sheriff court, and every person entitled to practise as an agent in a court of law in Scotland. The act abolishes all special privileges of practising in particular courts. See **SOLICITOR**.

Lawburrows, an old form of Scots process for compelling a man to find caution that he will

not do harm to the person or property of the complainer, his family, servants, or tenants.

Law Courts. See ROYAL COURTS OF JUSTICE, and separate articles on the different courts of law—e.g. SUPREME COURT, COURT OF SESSION, COUNTY COURTS, and SHERIFF COURTS.

Lawes, Sir John Bennett (1814-1900), English agriculturist, born near St. Albans. After studying chemistry, he started systematic experiments at Rothamsted (1834), particularly on the effect of bones as a manure. In 1843 he began at Deptford the manufacture of superphosphate for manure. He was created a baronet (1882). The results of his experiments are recorded in various scientific journals, especially those of the Royal Agricultural and Royal Societies. See Hall's *The Book of the Rothamsted Experiments* (1905).

Lawfeld, or LAVELD, vil., Limburg prov., Belgium, 4 m. from Maastricht; here the allies under the Duke of Cumberland were defeated by the French in 1747.

Law-merchant. The law-merchant is now scarcely distinguishable from the common law, and differs from it historically only in the fact that at one time it affected merchants alone, and that it is derived to a great extent from international usage. It was manufactured in the ports and markets of Europe, and consists of the customs connected with business and business documents, which have grown up for the convenience of mercantile transactions. A good example is the law of negotiable instruments. Lord Mansfield, during his famous sittings at the Guildhall, did much to develop and modernize the law-merchant. In some important cases it has become part of the statute law, as in the Bills of Exchange and Sale of Goods Acts.

Lawn. See LINEN.

Lawn Tennis. Lawn tennis is a game played by from two to four persons, who hit a ball with rackets to and fro over a net stretched across the centre of a court marked on the ground with lines. The game in its present form was practically first introduced into England in 1877, and became popular. In 1887 the Lawn Tennis Association was founded, and has since governed the affairs of the game. Grass courts are to be found everywhere, and the finest covered courts are those of the Queen's, Hyde Park, and Wimbledon Clubs, the floors of which are respectively wood blocks, boards, and asphalt. The rackets used vary in size and weight, 14 oz. being about the medium weight. The balls are of inflated indiarubber covered with white cloth, from $2\frac{1}{2}$ to $2\frac{3}{4}$ in. in diameter, and from 11 to 2 oz. in weight.

The Play.—The single-handed game is played by two persons in a single court. The opponents place themselves on opposite sides of the net. In serving, the server must comply with the following rules:—(1.) He may stand anywhere behind the base-line; the toe must not be over the line, under the penalty of a 'foot-fault.' (2.) He must serve alternately from right and left courts, beginning from the right. (3.) The ball must cross the net and fall in the rectangle diagonally opposite the server which is bounded by the service-side and half-court lines, or on any of these bounding lines. It is a fault if any of the above rules are broken. Two faults count a stroke to the 'striker-out'—i.e. the server's opponent. If the service is not a fault, but the ball touches the net, it is a let, and the server serves again. Neither faults nor lets may be taken. The striker-out must take

the service first-bound; after that the ball may be volleyed (*i.e.* hit before it touches the ground) or taken first-bound. If a player fails to hit the ball before it touches the ground twice, hits it into the net, or so that it falls outside the bounding lines of the court, or before it reaches his side of the net, or hits it twice, or is touched by the ball, or touches the net in making his stroke, his opponent wins a stroke. A ball falling on the line is reckoned to have fallen in the court. The method of scoring is the same as in tennis. (See **TENNIS**.) The four-handed game is played by two persons on each side in a double-court, in a manner similar to the single-handed game. In the service the ball must drop in the rectangle bounded by the service, service-side, and half-court lines. If W and X are playing Y and Z, the order of service is WYXZ, WYXZ, etc. The service is returned alternately by the two partners who are strikers-out throughout each game; but when once the service has been returned, either partner may take the ball.

The Method of Scoring.—On either player winning his first stroke the score is called 15 for that player, on winning his second stroke 30, and the fourth stroke is scored game, except as follows:—If both players have won 3 strokes, the score is called ‘deuce,’ and the next stroke won by either player is scored ‘advantage’ (‘vantage’) for that player. If the same player win the next stroke, he wins the game; if he lose the next stroke, it is again called deuce, and so on until either player wins the two strokes immediately following the score of deuce. The player who first wins six games wins a set.

See *Wilberforce's Lawn Tennis* (All-England Series, 1889),

Heathcote's *Lawn Tennis* (Badminton Library, 1889), Brownlee's *Lawn Tennis* (1897), Beldam and Vaile's *Great Lawn Tennis Players* (1905), F. W. Payn's *Tennis Players and Tactics* (1906), and A. W. Myers's *The Complete Lawn Tennis Player* (1908).

Law Officers. The law officers of the crown are the attorney-general and the solicitor-general of England and Ireland, and the lord advocate and the solicitor-general of Scotland.

Lawrence. (1.) City, Massachusetts, U.S.A., cap. Essex co., is situated in N.E. of the state, on the Merrimac R., 25 m. N.W. of Boston. Manufactures cotton and woollen goods, and foundry and machine-shop products. Pop. (1910) 85,892. (2.) City, Kansas, U.S.A., cap. of Douglas co., situated in E. of the state, on the Kansas R., 38 m. w. of Kansas City. Manufactures flour, paper, machinery, and nails. The state university is situated here. Pop. (1910) 12,374. (3.) Township, 60 m. s. of Dunedin, New Zealand, the centre of a large gold-mining district. Pop. 1,100. See Vincent Pyke's *Hist. of Early Gold Discoveries in Otago* (1887).

Lawrence, SIR HENRY MONTGOMERY (1806-57), Anglo-Indian soldier and statesman, elder brother of Lord Lawrence, was born in Ceylon. He joined the Bengal Artillery (1823); fought in the Burness war (1824-6), the Afghan war (1838), and the Sikh wars of 1845-9. When the Punjab was annexed (1849), he was appointed first administrator. On the outbreak of the mutiny, Sir Henry's wise precautions saved the European inhabitants of Lucknow, enabling the Residency to withstand a four months' siege after the city was in the hands of the rebels. Here he was mortally wounded on the second day of the defence. See *Lives by Ed-*

wardes and Merivale (1872), and Sir C. Aitchison (1892).

Lawrence, JOHN LAIRD MAIR, LORD (1811-79), who distinguished himself in the Indian mutiny, was born at Richmond, Yorkshire. He was sent to India (1829), and co-operated with his brother in the settlement of the Punjab, of which he was lieutenant-governor when the mutiny broke out. He instantly took the most vigorous measures, and through his influence with the Sikhs was able to raise a fresh army of 60,000 men to replace the mutinied regiments. To his splendid organization of the Punjab and his firm hold over the troops there the ultimate triumph of the British arms is due, and he has thus been called 'the saviour of India.' He was granted a life pension of £2,000 a year, and created a baronet (1859). In 1863 he became governor-general of India. He was made a peer in 1869. See *Lives* by Smith (1883) and Sir R. Temple (1889).

Lawrence, STRINGER (1697-1775), English soldier, called 'the father of the Indian army,' born at Hereford, and in 1748 was appointed to command all the East India Company's troops, at the moment when Dupleix was planning the conquest of S. India. With Clive, Lawrence carried out many successful operations, and contributed largely to the final frustration of French designs in India. See Biddulph's *Stringer Lawrence* (1901).

Lawrence, SIR THOMAS (1769-1830), English portrait-painter, was born at Bristol. At the age of five he was famed for his recitations and for his crayon portraits. He began to use oil colours at seventeen, and entered the Royal Academy schools (1787). His professional and social success in London was immediate. By the king's desire he was elected a supplemental A.R.A. (1791), and

appointed his Majesty's painter (1792). When he received full academical honours (1795), he was already without a rival in public estimation. Knighted by the prince regent (1815), three years later he went abroad on a commission to paint the allied sovereigns and principal continental personages in commemoration of the treaty of peace. On the death of West (1820) he was unanimously elected president of the Royal Academy. See Williams's *Life and Correspondence of Sir T. Lawrence* (1831), Cunningham's *Lives of the Most Eminent British Painters* (1829-33), Gower's *Sir T. Lawrence* (1900), Knepp's *An Artist's Love Story* (1904), Sir Thomas Lawrence's *Letter Bag*, ed. by G. S. Layard (1906), and Ward's *English Art in the Public Galleries* (1888).

Lawrenceburg, chief tn. of Dearborn co., Indiana, U.S.A., on the r. bk. of the Ohio, 22 m. w. of Cincinnati; has flour mills, distilleries, and furniture works. Pop. (1910) 3,930.

Lawrence, St., river. See ST. LAWRENCE.

Lawrence, St. (d. 258), martyr, one of the deacons at Rome under Sixtus I. During the persecution of Valerian he was called upon to surrender the church treasures; but instead he produced the poor and sick under his charge, declaring that these 'were his treasures.' He suffered martyrdom by burning. His day is August 10.

Law Reports. In England the earliest reports of judicial decisions are contained in the year-books. Down to 1865 legal reporting in England was a matter of private speculation; and the different series, or single volumes, bearing the names of their authors, vary considerably in accuracy and authority. In 1863 a committee was appointed by the bar to consider the ques-

tion of law reporting, and as the result of their report the Council of Law Reporting was established, under whose management and supervision the law reports have been published since 1866. In Ireland, India, and some of the colonies, the model of the law reports has to a great extent been adopted. For a full list of the English, Scottish, and Irish reports, with the abbreviations by which they are cited, see the beginning of the first volume of the *Encyclopaedia of the Laws of England* (1897-1903); and for a list of the colonial reports, see the article on 'Law Reports' in vol. vii. of the same work. In the United States official reporters are appointed for the Supreme Court, and in most of the state courts. A cheap republication of English and Scottish Law Reports from the earliest volumes is now appearing (Green, Edinburgh).

Laws; ROBERT (1851), African missionary and traveller, was born at Aberdeen. He qualified in medicine at Aberdeen University, and in divinity at the Theological Hall of the United Presbyterian Church, and in 1875 he joined a pioneer party going out to start the new Livingstonia Mission in East Central Africa. To his energy, enthusiasm, and thoroughness the development of Livingstonia is, in great measure, due. Dr. Laws was Moderator of the General Assembly of the United Free Church of Scotland in 1908. See LIVINGSTONIA.

Lawson, CECIL GORDON (1851-82), English landscape painter, born in Shropshire. He did much of his best work in black and white for the *Graphic* and other journals, and in 1870 exhibited at the Academy and the Grosvenor Gallery. Paintings by him are in Manchester, Liverpool, and the Tate Gallery, London. His principal works have been re-

produced in a *Memoir* by E. W. Gosse (1883).

Lawson, SIR JOHN (d. 1665), English admiral, fought during the civil war in the Parliamentary army, and afterwards in the fleet. In 1665, as vice-admiral of the 'Red squadron,' he took part in the battle off Lowestoft, where he was fatally wounded.

Lawson, SIR WILFRID (1829-1906), English statesman and temperance advocate, was born at Aspatria, Cumberland, and entered the House of Commons as Liberal representative for Carlisle (1859-65 and 1868-85), for Cockermouth (1886-1900), for Camborne Division, Cornwall (1903-5), and Cockermouth again (1906). In March 1864 he first brought in his Permissive Bill, 'to enable owners and occupiers of property in certain districts to prevent the sale of intoxicating liquors within such districts.' This cost him his seat. In 1880 he carried his Local Option resolution by a majority of twenty-six. The resolution was also passed in 1881 and 1883, and frequently since. Sir Wilfrid was considered 'the licensed wit' of the House of Commons, and published in conjunction with Sir F. C. Gould a book entitled *Cartoons in Rhyme and Line* (1904). See *Memoir* by G. W. E. Russell (1909).

Lawsonia, a genus belonging to the order Lythraceæ, containing only one species, *L. alba*, the henna plant. This is a tropical shrub, from whose fragrant white flowers is prepared the alhenna used in Arabia and Egypt for whitening the nails.

Law Terms. See TERMS.

Lawton, tn., Comanche co., Oklahoma, U.S.A., 25 m. s. by w. of Anadarko. Pop. (1910) 7,788.

Lawyer, the popular name of all members of the legal profession. In England and Ireland there are only two branches of the profession—viz. barristers

and solicitors. In Scotland the main division is into advocates and law agents, but the latter have different names and privileges according to the society to which they belong, such as writers to the signet and solicitors in the supreme courts in Edinburgh, advocates in Aberdeen, and procurators in Glasgow. In the United States and in many of the British colonies the two branches of the profession are not distinct, and attorneys-at-law act both as counsel and as solicitors.

Laxmannia, a genus of Australian fibrous-rooted, liliaceous plants, some of the species being cultivated as greenhouse plants in this country. *L. gracilis* and *L. grandiflora* are the favourite species.

Layamon (fl. 1200), author of *Brut*, a poetical paraphrase of Wace's chronicle, *Brut d'Angleterre* (1155), with additions of his own. Layamon's *Brut* exists in two MSS., both in the British Museum. These were edited, with translation, by Sir Frederick Madden (1847). All that is known of Layamon's life is told by himself: 'There was a priest in the land, Layamon hight; he was Leovennath's son. He dwelt at Ernley' (Areley Regis in Worcestershire), 'at a noble church upon the Severn's bank.' See Marsh's *Origin of English Language* (1865).

Layard, SIR AUSTEN HENRY (1817-94), English traveller and archaeologist, born in Paris; was destined for the bar, but in 1839 started on a series of travels in the East. Being on the Tigris (1840), he was impressed by the ruin-mounds of Nimrud, at Nineveh, and he began excavations (1845). In that and in the two following years he made many discoveries. His first book, *Nineveh and its Remains* (1848-9), aroused great interest, and was followed (1853) by *Discoveries in*

the Ruins of Nineveh and Babylon. Layard was present in the Crimea, and did much to expose the maladministration during the war. He was under-secretary for foreign affairs (1852 and 1861-66), chief commissioner of works (1868-9), ambassador at Madrid (1869-77), and ambassador at Constantinople (1877-80). See *Autobiography and Letters* (1903), and *Life* by Bruce and Otway (1903).

Layering, a method of plant propagation which consists in bending a part of the plant under the soil, so that it may emit roots before being separated from the parent plant.

Lay Reader. By the time of St. Cyprian it was the office of the readers, an inferior order of the clergy, to read all lessons in church, including even the gospel. In the Anglican Church readers are not actually ordained, but are laymen specially licensed by a bishop to assist in the work within his diocese. Lay readers are allowed, under certain circumstances, to preach, and to perform other functions.

Lazaref. See PORT LAZAREY.

Lazaretto (from *lazar*, 'a leper'), a word used in two distinct senses. (1.) A hospital for sick poor, especially lepers. Lazar-houses were common throughout Europe in the middle ages. Modern leper establishments exist at Bergen (Norway), Tracadie (New Brunswick), Robben Island (Cape Town), and Molokai I. (Hawaii). (2.) A place for the performance of quarantine.

Lazistan, coast strip on Black Sea, Asia Minor, E. of Trebisond, partly Turkish and partly Russian, and inhabited by the Lazia, a branch of the Georgian race, Caucasus. At one time Christians, they are now mainly Mohammedans.

Lazulite, a mineral, a hydrous phosphate of aluminium, magne-

sium, and iron; sometimes also called azurite and blue spar, from its blue colour.

L.C.C., London County Council.
L.D.S., Licentiate in Dental Surgery.

Lea, riv., England, rising in S. of Bedfordshire, flows S.E. into Hertfordshire, forming the boundary between that county and Essex and between Middlesex and Essex, and enters the Thames below the Isle of Dogs. Length, 45 m., of which 28 are navigable.

Lead (Pb , 206.9) is a metallic element of which the principal ore is the sulphide, galena (PbS), which occurs in brittle gray cubic crystals having a metallic lustre, and cleaving readily. Cerussite, or lead carbonate ($PbCO_3$), and anglesite, or lead sulphate ($PbSO_4$), are also minerals of considerable commercial importance. The methods of smelting the metal are as follows: (1) roasting and reaction; (2) roasting and reduction by carbon; (3) reduction by iron, or precipitation.

In the first method, or 'air-reduction' process, a high-grade galena is heated in the hearth of a reverberatory furnace in a current of air, until part of the lead sulphide is converted into lead oxide or sulphate. The air is then cut off, when the oxide or sulphate reacts with the unchanged sulphide, setting free lead, and yielding sulphur dioxide —viz. $2PbO + PbS = 3Pb + SO_2$, and $PbSO_4 + PbS = 2Pb + 2SO_2$. The molten lead collects in a depression of the hearth, and is tapped off.

Sometimes the process is carried out in open hearths fitted with a blast-pipe, and the reduction of the oxide aided by coal; a similar plan being employed with poor and oxidized ores, which are heated in a small blast-furnace with a flux such as limestone, and coke to set free the lead.

Reduction by iron is chiefly employed with ore containing other valuable metals, the ore being heated with scrap iron, or even iron oxide, in a blast-furnace, with the result of producing metallic lead, a matte containing sulphides of copper, silver, iron, and other metals, and a slag of silicate of iron.

The crude lead obtained by these processes requires to be purified for the market. The impurities may be divided into two classes—viz. (1) metals such as antimony, iron, and arsenic, which are oxidizable when heated in air; and (2) silver, which is not.

The former are removed by heating the lead in a reverberatory furnace with a shallow hearth, and by skimming off the dross containing the oxides.

Silver is removed either by Pattinson's or Parkes's process. The former depends on the fact that when a solution of silver in molten lead is allowed to cool and crystallize, the crystals contain less silver than the still molten liquid. By carrying this process out systematically, it is possible to obtain from lead containing as little as three or four ounces of silver to the ton, on the one hand, almost pure lead, or a richly argentiferous lead containing about 700 oz. of silver to the ton on the other. The rich lead is then cupelled—i.e. heated in a blast of air—when the lead is oxidized and removed as dross, the silver being left. Parkes's process depends on the fact that the silver in lead can be dissolved out by molten zinc, the silver-zinc alloy floating on the lead, and being afterwards skimmed off.

Lead is a bluish-gray and very soft metal, malleable and ductile, but with little tenacity. Its sp. gr. is 11.4; it melts at 328° C., and is a poor conductor of electricity. In pure dry air lead remains un-tarnished; but in the presence of

air and moisture it becomes dull, the coating of oxide, however, protecting the lead from further change. Heated in air, oxidation rapidly takes place, and the monoxide (PbO), known as litharge or massicot, is formed as a brownish-yellow solid.

Red lead, or minium (Pb_3O_4), is obtained by heating the monoxide in air; and the peroxide (PbO_2) can be separated from red lead as a dark brown powder with powerful oxidizing properties by treatment with dilute nitric acid. The sulphide of lead, besides occurring naturally as galena, can be prepared by direct union, or the precipitation of the solution of a lead salt with hydrogen sulphide. The soluble salts of lead, of which the acetate, sugar of lead ($(CH_3COO)_2Pb$, and the nitrate, $Pb(NO_3)_2$, are the most important, are prepared by dissolving litharge or metallic lead in the dilute acid, and are colourless crystalline solids with an astringent taste. The sulphate, or anglesite ($PbSO_4$), and the chloride ($PbCl_2$), of which the former is very insoluble and the latter sparingly soluble, are prepared by precipitation of a solution of a soluble salt with sulphuric or hydrochloric acid. The basic carbonate ($2PbCO_3Pb(OH)_2$, or 'white lead,' is prepared by various processes, and is a white insoluble powder largely employed as a pigment by painters.

The salts of lead are strongly astringent, and are thus employed externally in lotions, in the treatment of ulceration and mucous discharges. Internally, the astringent action is of value in diarrhoea and internal haemorrhage, but, at the same time, overdoses act as violent irritants. See LEAD POISONING.

Lead itself is valuable, on account of its softness and the slight effect of air and water on it, as a material for roofing, and

for making pipes and cisterns. On account of its specific gravity, lead is used for bullets and shot, the formation in the latter case of perfect spheres being obtained by dropping the molten metal hardened by the addition of about 3 per cent. of arsenic into cold water from a great height. Lead alloyed with other metals produces useful alloys. Thus, with from 33 to 66 per cent. of tin solder is obtained, and with 80 per cent. pewter. Type metal contains from 15 to 18 per cent. of antimony and from 3 to 10 per cent. of tin; other tin, antimony, and lead alloys serve as bearing metals. Lead is largely used as a protective covering for electric cables, and, in company with its oxides, for the manufacture of accumulator plates.

Of the compounds of lead, litharge and red lead are used in the manufacture of flint-glass, in glazing earthenwares, and in the preparation of drying oils. See Lambert's *Lead and its Compounds* (1902), Ingalls's *Lead Smelting* (1906), and Collins's *Metallurgy of Lead* (2nd ed. 1910).

Lead, city, Lawrence co., S. Dakota, U.S.A., in s.w. of state, 3 m. s.w. of Deadwood, and in gold-mining region of the Black Hills. Pop. (1910) 8,392.

Lead, SUGAR OF. See LEAD.

Lead, THE, an instrument for ascertaining the depth of water at sea, from 7 to 14 lbs. in weight, and usually of a shape similar to that of an old-fashioned clock-weight. Its lower extremity is hollowed, for the purpose of being filled with tallow, to ascertain what kind of ground the soundings are struck upon. Through a hole at the upper end is a flexible ring of leather, or cord, or other material, to which the line is attached. The line is 20 fathoms long, and is marked at definite intervals. It is prescribed in the *King's Regulations*

that ships of the navy, when in pilot waters, or near land or shoals, shall constantly keep the hand-lead going. The weights of lead necessary for deep-sea soundings are, of course, much greater than those for ordinary purposes, and extend to 560 lbs. See Bedford's *Sailor's Pocket-book* (9th ed. 1898); Patterson's *Navigator's Pocket-book* (1894); Sigsbee's *Deep-sea Soundings and Dredging* (1880).

Leader. BENJAMIN WILLIAMS (1831), English landscape painter, born at Worcester; exhibited his first picture, *Cottage Children Blowing Bubbles*, in 1854. Leader visited the Highlands first in 1856, and mountain scenery became henceforth his speciality, North Wales and Scotland being his favourite haunts. In 1905 he exhibited, among other works, *The Incoming Tide on the Cornish Coast*, at the Royal Academy. He became R.A. in 1898.

Leadgate, vil. and urb. dist., England, co. of and 10 m. N.W. of Durham; has coal and iron mines. Pop. (1911) 4,990.

Leadhills, vil., Scotland, co. of and 18 m. s. of Lanark; is the highest village (1,300 ft.) in the country. It has famous lead mines, the annual output of which is from 800 to 1,000 tons. Silver is also mined. Allan Ramsay, the poet, was a native. Pop. 835.

Lead Plaster consists chiefly of lead oleate, $(C_{17}H_{33}COO)_2Pb$, and glycerin, and is prepared by boiling litharge (PbO) with water and olive oil. It is used as the basis of many plasters employed in medicine, and for the preparation of standard solutions of soap for water analysis.

Lead Poisoning (synonyms, 'plumbism' and 'Saturnism') is a widespread form of poisoning, and occurs chiefly among those whose avocation compels them to handle compounds of lead. Painters, plumbers, glaziers, and

pottery workers are specially liable to it. Drinking-water, cider, and wines, however, may become contaminated with lead, and certain compounds of the metal are capable of absorption by the lungs, or in the form of cosmetics by the skin.

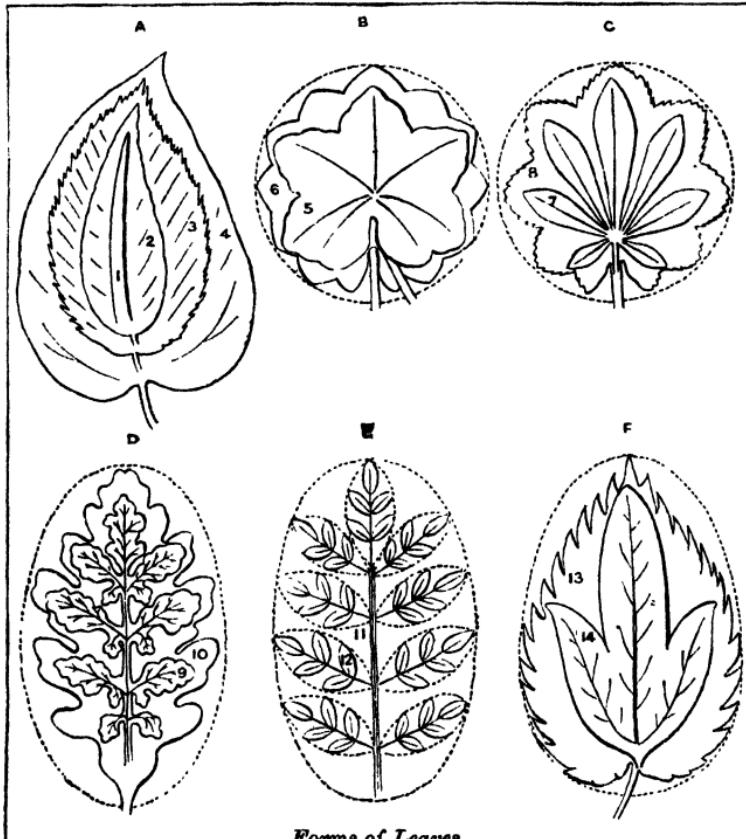
The acute form of plumbism is marked by a rapid and grave anaemia, along with severe colic, nervous symptoms, and often constipation, alternating with diarrhoea. The more chronic forms cause anaemia, which may be profound, and in many cases there appears along the margin of the gums a bluish-black line, which is caused by the deposit of sulphide of lead in the tissues.

Cleanliness of the hands and skin surfaces, and the use of respirators by those who are exposed to forms of lead which may be inhaled, should be insisted upon. To eliminate the poison from the system, potassium iodide, with frequent saline purgatives, ought to be given.

Leadville, city of Colorado, U.S.A., cap. of Lake co., near the Arkansas R., in a rich silver and lead mining region, 80 m. s.w. of Denver. Has large smelting furnaces. Pop. (1910) 7,508.

Leaf, one of the nutritive organs of a plant, arising from the stem, or a shoot, below the growing point, at certain intervals called nodes, the spaces between being termed internodes. In the leaves of monocotyledons the venation is for the most part parallel, while in those of the dicotyledons it forms a network. The expanded portion is the lamina or blade, normally attached to the axis by a stalk or petiole, at the base of which there may be lateral appendages, usually one on each side. The mode of attachment varies greatly; and when there is no petiole, the leaf is said to be sessile. When the blade is in

one piece, the leaf is simple. No two leaves are exactly alike; There is great variety of shape; and the various forms bear some but though Linnaeus, in 1751, definite relation to the habit of figured the outlines of forty-four the plant. The water-crowfoot



Forms of Leaves.

A. Types of simple leaves: 1, linear; 2, lanceolate; 3, elliptical; 4, ovate. B. Simple leaves derived from the circular type: 5, palmately lobed; 6, orbicular and peltate. C. Compound leaves derived from the circular type: 7, palmately compound; 8, cleft orbicular. D. Simple leaves derived from the elliptical type: 9, pinnately lobed; 10, pinnately divided. E. Compound leaves derived from the elliptical type: 11, 12, bipinnate. F. Leaves derived from the oval type: 13, ovate and serrate; 14, palmately three cleft.

forms, the number has now been reduced to a few simple mathematical types. A leaf split into leaflets is said to be compound. (*Ranunculus aquatilis*), common in almost every pond, is a good example of a plant with leaves of two kinds. Those that float on

the surface are more or less circular; those beneath the water are finely divided. Modifications for special functions may occur. Familiar examples in this country are the tendrils of the old man's beard (*Clematis vitalba*) and the traps of the bladderwort (*Utricularia*). Some leaves take on the bright colours of petals, as in the Mexican Christmas flower (*Poinsettia pulcherrima*), and the members of the floral whorls (sepals, petals, stamens, and carpeis) are only modified leaves.

The functions of leaves are threefold: (1) transpiration, or the getting rid of surplus water, absorbed with earthy salts by the roots; (2) respiration, or the interchange of inspired oxygen for expired carbon dioxide; and (3) assimilation, in which the carbon dioxide absorbed from the air is split up by the green colouring matter (chlorophyll), the oxygen being set free, and the carbon utilized as the foundation for organic products built up from water and earthy salts. This last function can take place only under the action of light. Leaf-structure is somewhat complicated, and for its full appreciation the compound microscope is necessary. It consists of fundamental tissue, covered above and below by a skin or epidermis, and traversed by vascular bundles, some of which serve as water-carriers, while others transport nutritive material into the body of the plant. This system of vascular bundles is commonly called the venation, and may be well seen in decayed skeleton leaves. It is the green fundamental tissue, easily seen by stripping off the epidermis, which is the active agent both in respiration and in assimilation. In a transverse section of a leaf, viewed under a high power, one sees beneath the epidermis of the upper (or ventral) surface the vertically-elon-

gated palisade cells, the vascular bundles, and the spongy tissue, enclosing irregular intercellular air-spaces, and bounded by the epidermis of the lower (or dorsal) surface. The lower epidermis is pierced with air pores or stomata, communicating with the intercellular spaces, and serving for the escape of air and watery vapour.

Vernation is the manner in which each separate leaf is folded in the bud. *Phyllotaxy* is the arrangement of leaves on a stem; the commonest forms are alternate (at each node, first on one side, then on the other), opposite (on each side of each node), and verticillate (in a whorl round each node). By the same term is also indicated the relation of that part of a spiral which passes through successively ascending leaf-bases to the circumference. See Geddes's *Chapters in Modern Botany* (1893); Lubbock's *Flowers, Fruits, and Leaves* (1886).

Leaf Insects, called also WALKING LEAVES, belong to the family Phasmidæ of the order Orthoptera. All the members of the family show some resemblance to such natural objects as dried and withered leaves, sticks, bark, and pieces of moss; but it is in the genus *Phyllium* that the resemblance to a leaf reaches its maximum. The members of the genus occur in tropical parts of the Old World, especially in islands. It is only the female which is markedly leaf-like, and the resemblance is produced by the anterior wings (*tegmina*), which in shape, veining, and colour very closely resemble the leaves among which the insect lives, and on which it feeds. In addition, the legs bear foliaceous expansions, which increase the resemblance. The second pair of wings (true wings) is absent in the female, but present in the male. The eggs closely resemble seeds.

League, a measure of length originated in ancient Gaul, and estimated by the Romans as equal to 1,500 paces. It was introduced into England by the Normans, and measured two old English miles, or nearly three statute miles. It has fallen into disuse except as a nautical measure, when it equals one-twentieth of a degree, or three geographical miles, 3·456 statute miles. The old French form is *legue*, from Latin *lega*.

Leagues. HISTORICAL. In Germany leagues of towns exercised considerable influence during the 14th and 15th centuries. Leagues between nations hardly existed before the 16th century. The crusades were, in a sense, leagues formed to oppose the Turks; and the third crusade especially represented the close union of England, France, and Germany. With Charles VIII.'s expedition to Italy (1494) modern history began, and new conditions arose. In 1508-9 the League of Cambrai was formed by Louis XII., Ferdinand of Spain, and the Emperor Maximilian, and was joined by Pope Julius II. (1509), for the purpose of diminishing the power of Venice. Hardly had the league succeeded in its aims when its members quarrelled, and Julius II. formed the Holy League to expel the French from Italy. During the rest of the century leagues were frequently made for a variety of purposes. Of these the most famous in the 16th century were the Smalkaldic League in Germany and the Catholic League in France. The Thirty Years' war was heralded by the formation in Germany of the Protestant Union and the Catholic League.

Towards the end of the conflict between France and Spain, which continued after the peace of Westphalia, Mazarin contributed

to the formation of the League of the Rhine, which was composed of powerful German princes, and was intended as a check upon the emperor. During the remainder of Louis XIV.'s reign the object of all the leagues that were formed was the diminution of the power of France. Thus, in 1686, the League of Augsburg was called into being by the seizure by Louis XIV. of Strassburg and German lands in the period of peace succeeding the treaty of Nimeguen. The Grand Alliance, which was formed in 1701-2, was a similar league, with similar objects. During the 18th century the most famous league was that of France and Spain, which were united by a series of family compacts. See Dyer and Hassall's *Hist. of Modern Europe* (3rd ed. 6 vols. 1901), Stubbs's *Lectures on European History* (1904), and Cambridge *Modern History* (1903-1910).

Leakage and Breakage. In bills of lading or charter-parties, the words 'leakage and breakage excepted,' or 'not accountable for leakage and breakage,' are often inserted for the protection of the shipowner.

Leake, Sir John (1656-1720), English admiral, born in London; entered the navy, and was commander (1688), captain (1689), rear-admiral (1702), full admiral (1707), and first lord of the Admiralty (1710). He saw service at the relief of Londonderry, Barfleur, and Malaga, and in 1705-7 commanded in the Mediterranean. See *Life* by S. M. Leake (1750).

Leake, William Martin (1777-1860), English archeologist and numismatist, born in London; was sent by government on a mission to the East (1808), and travelled widely in Asia Minor and Greece, combining archaeological and geographical labours with diplomatic duties. He was the first classical scholar to ex-

plore the Peloponnesus. His chief works are *The Topography of Athens* (1821), *Tour in Asia Minor* (1824), *Travels in the Morea* (1830), *Numismata Hellenica* (1854-5). See *Memoir* by Marsden (1864).

Leamington, or ROYAL LEAMINGTON SPA, munic. bor., Warwickshire, England, 2 m. E. of Warwick, on the Leam. It is much frequented for its mineral waters (sulphureous, chalybeate, and saline). There are iron foundries and brick-works. Pop. (1911) 26,717. See Garrod's *Medicinal Springs of Leamington* (1895).

Leander, in ancient Greek story, a youth of Abydos, on the Hellespont, who loved Hero, the priestess of Aphrodite, in Sestos, and swam the strait every night to visit her. The lighthouse at Sestos guided him; but one stormy night its light failed, and he was drowned. The story is told by Musæus in his epic of Hero and Leander, and is also referred to by Ovid, Statius, and Virgil. See also Marlowe and Chapman's *Hero and Leander* (1598).

Leap Year. When Julius Cæsar reformed the Roman calendar, he added a day every fourth year in order to make the average solar year 365½ days. This was done by doubling the sixth day before the Calends of March, and hence the year was called bissextile—a name it still retains among the Latin nations of Europe, by whom February 24 is regarded as the intercalated day. In the British Isles this year is called leap year, because the Sunday letter *leaps* a day, no letter being affixed to February 29. Every year divisible by 4 is a leap year, unless it be any number of hundreds not divisible by 400. See CALENDAR and YEAR.

Lear, EDWARD (1812-88), English artist and author, was born in London; began drawing in

the Zoological Gardens, assisted Gould in his *Birds* (1832-6), and worked under Lord Derby's patronage on *The Knowsley Menagerie*. It was for the earl's grandchildren Lear produced his famous *Book of Nonsense* (1846), which went through twenty-seven editions. He also wrote *The Journal of a Landscape Painter in Corsica* (1870). Tennyson addressed to him a famous lyric. See *Memoir* by Franklin Lushington, prefixed to *Poems, illustrated by Edward Lear* (1889), and *Letters*, ed. by Lady Stachey (1907).

Lease. See LANDLORD AND TENANT.

Leasing Making, in Scots law, the crime of speaking evil of the king personally. In modern days it is not treated as a crime unless it forms part of a treasonable transaction. See SEDITION.

Leather. Owing to the variety of purposes to which leather is applied, and the considerable differences in the hides and skins which are used in its manufacture, the processes of leather manufacture are complicated and numerous. Technically, the trade is divided into many sections, such as tanning, currying, and leather-dressing.

The skins of the mammalia consist of two principal layers, of which the inner is called the *corium*, or 'true skin'; while the outer, or *epidermis*, though perhaps biologically it has the greater claim to be considered the true skin, is valueless to the tanner, who makes it his first business to remove it. The leather-producing corium consists of a network or felt of white fibres, each in its turn capable of being split into finer fibrils, finer and more closely felted near the outer surface of the skin, which is called the 'grain.' The hair or wool is rooted in the outer or 'grain' surface of the corium, but

is really a product of the epidermis layer, which sinks into and lines the orifices in which the hairs are rooted.

Skins dressed with the hair on belong rather to the class of furs than to leathers, and the first treatment to which hides and skins intended for the latter are subjected is usually immersion and moving about in a milk of caustic lime, which loosens the hair by dissolving the cells of the epidermis. This process, which lasts from one to three weeks according to the character and thickness of the skin, also causes the gelatinous fibres to absorb water and swell, at the same time dissolving the 'cementing substance' between them, loosening them from one another, and separating them into their finer fibrils. The further this action is carried, the softer and looser is the resultant leather. In place of liming, the hair of ox and cow hides for sole leather is sometimes removed by 'sweating' or incipient putrefaction, caused by hanging in a warm and moist chamber. In this case the swelling and loosening of the fibre do not take place, and the hides, which must be subsequently swollen by acid in the tanning process, make a very firm and solid leather. The process of 'sweating' is also frequently applied to sheepskins, with the object of removing the wool without the injury which is caused to it by liming, to which the skins are subsequently subjected. Alkaline sulphides are now frequently used to assist or replace the lime in unhairing.

When the hides or skins come out of the limes, the loosened hair is removed by scraping on a sloping rounded wooden beam with a blunt two-handled knife; and subsequently the loose subcutaneous tissue and adhering flesh and fat are scraped and cut

off on the same beam by a somewhat similar knife with two edges, one of which is kept very sharp.

So far the process is the same, except in details, whether the goods are heavy hides for sole leather, or lamb and kid skins for gloves; but from this point it diverges. Sole-leather hides are usually merely washed with water to remove as much lime as possible, and after trimming or 'rounding' are ready to be tanned. Hides and skins for soft leathers, however, require not merely to be more carefully freed from lime, but brought down from their swollen condition to one of flaccidity and softness. This is usually accomplished by the action of fermenting infusions of excrement—that of pigeons and fowls being employed for hides and heavy skins, and that of the dog for the finer leathers. Recently, the work of Mr. J. T. Wood in England (*Jour. Soc. Chem. Industry*, 1898 and 1899), and of Drs. Popp and Becker in Germany, has resulted in the preparation of a nutritive medium 'erodin,' prepared by chemical treatment of gelatinous matter, which, when inoculated with a pure culture of suitable bacteria, is capable of exactly imitating the effect of the fermenting infusions, with much less danger to the skins. They are now ready for conversion into leather, either by the ordinary tanning process with vegetable materials, by 'tawing' with alum and salt, or by any of the various 'combination' and chrome tannages which are now largely used.

Tanning with vegetable materials is still more largely used than any other method. In principle it always consists in bringing the prepared skin or hide at first into weak infusions of the tanning material, which have generally been previously used for more nearly tanned

goods, and gradually changing and strengthening these infusions.

The bark of the oak is one of the oldest and perhaps the most satisfactory of tanning materials, but its place has been largely taken by other vegetable products.

In sole-leather tanning, in this country, oak bark, valonia, and oak wood and chestnut extracts are now the most important materials. The 'butts,' or hides from which the necks, shoulders, and thinner parts from the belly have been removed by 'rounding' or trimming, after washing, are suspended in pits containing weak and previously used liquors. They are frequently moved, or are kept in gentle oscillation by machinery, and after a week or ten days in suspension, during which time they are gradually advanced into stronger liquors, they are transferred to pits called 'handlers,' in which they are laid flat in liquors, and handled daily, by being raised with long-handled hooks, and pulled over into the next pit, the 'packs' or parcels of butts being arranged in order of progress in tanning, and consequently of strength of liquor. After some weeks of treatment of this sort, in the later stages of which the butts are frequently sprinkled with some dry 'dusting' material, such as ground bark, valonia, or myrobalans, they are ready for the 'layers'—the final stage of the sole-leather tannage. Formerly two years or more were frequently occupied in tanning sole leather, and some tanners still take twelve months, though three or six months are probably much more common. The various 'electric' processes of tanning, which have been from time to time largely advertised, have probably in most cases depended for their efficacy on mechanical motion, the use of strong liquors,

and the heat evolved by the friction, rather than on any immediate electrical effect.

Sole leather is finished by stretching and smoothing with a two-handled tool of triangular section called a 'striking pin,' and by rolling with heavily-loaded brass rollers, both of which operations are now generally performed by machines. The leather must be partially dried before it is 'struck' and rolled, and the drying is finally completed at a gentle heat.

Dressing leathers, such as are used for the uppers of heavy boots, and other purposes for which moderately soft leathers are required, are limed and usually coloured in weak and old tanning liquors in a large vat provided with a paddle-wheel to keep the hides and liquor in motion. The remainder of the process is similar to that used for sole leather, but weaker liquors are employed, shorter time is required, and in many cases the use of 'layers' is dispensed with.

Currying is the finishing process of all the heavier 'upper leathers,' as well as of those intended for harness, belting, and other purposes where flexibility and resistance to water are required. In principle it consists in impregnating the leather with fats and oils; but many mechanical processes, such as scouring, stretching, and shaving, designed to level, smooth, and improve the appearance of the leather, are included in it.

Patent and enamelled leathers are made by coating ordinary leather with a varnish made by boiling linseed oil with Prussian blue. Many successive coats are applied, the earlier ones being smoothed by pumicing.

Moroccos are goatskins, usually tanned with sumach. They are glazed by damping with a very weak solution of albumin (or

blood) and milk, and, after drying, are polished.

Kid leather is a term rather distinguishing a mode of dressing than the skin of a particular animal. Glove kid is mostly made from the skins of young lambs, though kidskins are often used for the best qualities.

Chrome leathers ('box calf,' 'willow calf,' etc.) are tanned by somewhat complex processes in which salts of chromium take the place of those of alumina.

Chamois leather (so called, not from the antelope of the Alps, but from the process of manufacturing) is generally made from the inner or flesh-split of sheepskins, though for gloves and finer purposes deerskins (buckskin) are sometimes used. Buff leather is a similar product from ox or cow hides.

See Procter's *Principles of Leather Manufacture* (1903), Davis's *Manufacture of Leather* (1897), and De Recy's *The Decoration of Leather* (trans. 1905).

Leather, AMERICAN. See AMERICAN CLOTH.

Leatherhead, tn. and par., Surrey, England, 12 m. s.w. of Croydon; has brick and tile works, breweries, and tanneries. Pop., urb. dist. (1911), 5,491.

Leather-wood, a deciduous shrub (*Dirca palustris*), order Thymelaeaceæ, a native of N. America. It grows to about four feet in height, and its very tough bark is used for making ropes, paper, and baskets.

Leave, MILITARY. See OFFICER.

Leaven (in the Bible). The distinction between leavened and unleavened bread was of considerable importance in the ritual of the Hebrews. While leavened bread was in general use, the leaven was, from haste or other causes, sometimes omitted. It was the lack of time which caused the Israelites to prepare un-

leavened bread on the eve of their departure from Egypt (Exod. 12:34), and the 'seven days of unleavened bread' (12:15) were observed in commemoration of this, and in connection with the feast of the Passover. During that period the bread eaten was *mazzoth*—i.e. sweet or unleavened cakes. No leavened bread was permitted in sacrifice (Exod. 23:18), but only in offerings which were consumed by the priests (Lev. 23:17). Such prohibitions were based on the idea that fermentation was a kind of corruption. Instances of a similar objection to leaven are found among heathen peoples (Plutarch's *Quæst. Rom.*, 109). See commentaries on Exodus.

Leavenworth, city of Kansas, U.S.A., cap. of Leavenworth co., situated in E. of the state, on the Missouri R., 25 m. N.W. of Kansas City. Has coal mines, and manufactures bricks, stoves, furniture, machinery, and flour. North of the city is Fort Leavenworth, a military post. Pop. (1910) 19,363.

Lebadela. See LIVADIA.

Lebanon. (1.) City of Pennsylvania, U.S.A., cap. of Lebanon co., situated in S. of state, in the iron region, 75 m. W.N.W. of Philadelphia. Industries: iron-mining, machinery, and brick-making. Pop. (1910) 19,240. (2.) Co. seat of Grafton co., New Hampshire, U.S.A., 60 m. N.W. of Concord. Pop. (1910) 5,718. (3.) Co. seat of Boone co., Indiana, U.S.A., 25 m. N.W. of Indianapolis. Pop. (1910) 5,474.

Lebanon, MOUNT (Lat. *Libanus*), a mountain range in Palestine and Syria, called by the Arabs *Jebel-el-Gharbi*, 'the white mountains.' It runs from N.E. to S.S.W. for 95 m. from Nahr Kasmiyah, known as the river Litany, the ancient Leontes, to Nahr-el-Kebir, the ancient Eleu-

therus. The plain of Coele-Syria (modern Bek'a) divides Lebanon from Anti-Libanus, which, starting from the Barada (Abana), runs 65 m. parallel to Lebanon. The mean elevation of the Lebanon range is from 6,000 to 8,000 ft., that of Anti-Libanus from 5,000 to 6,000 ft. The Lebanon streams, with few exceptions, rise on the w. side and drain towards the Mediterranean. Villages are scattered over the ranges. A narrow-gauge railway, opened in 1895, has taken the place of the road across the mountains from Beirut to Damascus. Wheat, the vine, the mulberry, and the walnut are abundant. Once covered with trees, the mountains are now bare, only a few groves remaining of the famous cedars. They stand on the w. slopes of Jebel Makhmal, at an alt. of 6,000 ft. Silk is largely manufactured. Coal mines are worked, and iron ore is abundant. The climate is healthy. In 1861, after the wars between the Maronites and Druses, the government of the mountains was reorganized. A Christian governor, with a summer residence at Beit-ed-Din and a winter residence at Baabda, was appointed under the general protection of the powers. The population, variously estimated at from 260,000 to 400,000, consists mainly of Maronites in the N., Greek Christians and Druses in the s. See standard works on Syria and Palestine by Robinson, Buhl, and George Adam Smith; also Fraas's *Drei Monate im Lebanon* (1876).

Lebbeke, comm., Belgium, in East Flanders, 16 m. N.W. of Brussels; has tanneries. Pop. 7,700.

Lebedin, tn., Kharkov gov., S. Russia, 90 m. W.N.W. of Kharkov city; famous as the centre of Peter the Great's campaign against Mazeppa in 1709. Pop. 14,200.

Lebedyan, tn. of Tambov gov., Central Russia, 100 m. w. by N. of Tambov city, cap. of dist., on l. bk. of Upper Don. Trade in cattle and horses, cereals, furs, and leather. Pop. 14,000.

Leblanc Soda Process. See SODIUM.

Lebeuf, EDMOND (1809-88), French general, born at Paris. He entered the artillery in 1832, and gained distinction in the Crimean and Italian campaigns. His misfortunes began when in 1869 he was appointed war minister. Unequal to the administration of a great department, he believed France to be in a state of complete preparation. After his appointment in 1870 as marshal of France, the revelation of his mistakes forced him to take a minor command, and he courted death recklessly at Gravelotte, Noiserville, and elsewhere, and was made prisoner at the fall of Metz. He returned from a German prison to face an inquiry, and then retired from public life.

Le Bossu, RENÉ (1631-80), French critic, canon regular of Sainte-Geneviève, won a European reputation by his *Traité du Poème Épic* (1675). It was well known in England, being praised by Dryden, used by Addison for his papers on *Paradise Lost*, and given in extract in the prefatory matter to Pope's *Odyssey*. An English translation, by 'W. J.', appeared in 1695, and again in 1719. See Memoir by Le Coutray, prefixed to the sixth edition of the *Poème Épic* (1714).

Lebrija (anc. *Nebrissa Veneria*), tn. Seville, Spain, 34 m. s. by w. of Seville. It has trade in grain, oil, wine, and cattle. The ruined castle exhibits a mixture of Arabic, Roman, and Gothic architecture. Pop. 11,000.

Le Brun, CHARLES (1619-90), French historical painter, born at Paris, and was employed for fifteen years by Louis XIV. on the

decoration of Versailles. Le Brun helped to found the Academy of Fine Art in Paris, taught there, and became (1683) its director. In 1660 Colbert appointed him director of the Gobelins factory. See *Lives* by Genevay (1885) and Jouin (1890).

Le Brun, MARIE LOUISE ELISABETH VIGÉE (1755-1842), French painter, born at Paris; married (1776) a grand-nephew of Charles Le Brun. She painted many of the great personages of the time, including Marie Antoinette, the Prince of Wales, Byron, and others. The Louvre (Paris) contains many of her best works. See her *Souvenirs* (1835-7).

Lebrun, PONCE DENIS ECOUCHARD (1729-1807), French poet, known as Lebrun-Pindare, was born at Paris. He acted as secretary to the Prince of Conti, and was subsequently under the patronage of Calonne, Robespierre, and Napoleon. His satires and epigrams possess some distinction. A collection of his works appeared in 1811, and his *Oeuvres Choisies* in 1822-8.

Le Caron, HENRI (1841-94), whose real name was Thomas Miller Beach, British secret service agent, born in England. A prominent member of the Fenian body, he was aware of their conspiracy against Canada; and becoming in 1865 a spy of the British government, he supplied it with much information. In the Parnell Commission of 1889 he was called as a witness. See his *Twenty-five Years in the Secret Service* (1892).

Lecce (anc. *Lupia Civitas*), cap., prov. Lecce, Apulia, Italy, 22 m. s.s.e. of Brindisi. It has trade in Lecce oil (7,208 tons in 1909), wine, tobacco, cotton, wool, soap, and leather, while the district produces fruits and grain. The city is connected by electric cars with San Cataldo, on the coast, 7 m. distant, much visited on account

of its castle. Pop. 33,000. The prov. forms the s.e. extremity of the Italian peninsula; its area is 2,620 sq. m., and pop. 750,000. See M. S. Briggs's *In the Heel of Italy* (1910).

Lecco, city, prov. Como, Lombardy, Italy, 16 m. e. by n. of Como, on the s.e. arm (Lake Lecco) of Lake Como. Manufactures iron, copper, silk, and cotton. Manzoni describes the district in his *I Promessi Sposi*. Pop. 10,500.

Lech, r. bk. trib. of the Danube, Austria and Germany, rising in Lake Formarin (6,120 ft.) in the Vorarlberg, flows N.E. through Tyrol, then N. through Bavaria, and after a course of 180 m. falls into the Danube below Donauwörth.

Lechhausen, tn., Germany, in Bavaria, a n.e. suburb of Augsburg. Pop. (1910) 18,410.

Lecithin, a compound, or mixture of compounds, of complex composition, having approximately the formula $C_{24}H_{44}NPO_3$, which is an important constituent of nervous tissue and yolk of egg. It is prepared from the latter, and is soluble in alcohol, from which it crystallizes in waxy needles. On decomposition it yields glycerol, phosphoric acid, higher fatty acids, and choline.

Lecky, WILLIAM EDWARD HARTPOLE (1838-1903), Irish man of letters, was born near Dublin, and educated at Trinity College there. He published anonymously (1861) *The Leaders of Public Opinion in Ireland* (now ed. 1903), and devoted himself chiefly to historical work till 1895, when he was elected one of the parliamentary representatives for Dublin University, a position which he resigned in 1902. Among his other works were *History of Rationalism in Europe* (1865); *History of European Morals from Augustus to Charlemagne* (1869); *History of England in the Eight-*

eenth Century (1878-90); *Poems* (1891); *Democracy and Liberty* (new ed. 1899); *The Map of Life* (new ed. 1901); and *Historical and Political Essays* (1908).

Leclaire, EDMÉ JEAN (1801-72), originator of the system of profit-sharing between employer and employed, born at Aisy-sur-Armancourt; went to Paris, and started business as a house-painter. His system was first tried in 1842, and proved eminently successful. See Hart's *Maison Leclaire* (1883).

Leclanché Cell. See CELL, VOLTAIC.

Le Clerc, JEAN (1657-1736), Swiss writer and theologian, born at Geneva; was professor at the Remonstrant seminary, Amsterdam (1684-1728). His greatest works were the *Bibliothèque Universelle et Historique* (25 vols. 1686-93), the *Bibliothèque Choisie* (1703-13), and the *Bibliothèque Ancienne et Moderne* (1714-27); but his wide learning was also proved by his editions of the ancient classics and his *Ars Critica* (1712-30). See Hoeven's *De Jo-hanne Clerico* (1845).

Lecluse. See CLUSIA.

Lecocq, ALEXANDRE CHARLES (1832), French composer of comic operas. His style is light and happy, and many of his works are popular. They include *Les Cent Vierges* (1872); *La Fille de Madame Angot* (1873); *Les Frères St. Gervais* (1874); *Giroflé-Girofla* (1874); *La Marijolaine* (1877); *Le Cygne* (1899); and *Yetta* (1903).

Leconte de Lisle, CHARLES MARIE (1818-94), French poet, born at St. Paul, Isle of Bourbon, and was intended by his father for a mercantile career. Proceeding to Paris (1846), he assisted in the foundation of a paper, *Le Sifflet*. Leconte de Lisle's first poem, *Venus de Milo* (afterwards incorporated in his *Poèmes Antiques*), was published in 1848, and showed a keen interest in politics, with a strong republican

bent. After the establishment of the second empire, however, Leconte de Lisle ceased to take an interest in public affairs. His *Poèmes Antiques*, which appeared in 1852, contained some of his best work. Leconte de Lisle was a strong pessimist and anti-Catholic. But even when he is dealing with themes which might evoke these sentiments, he treats them only with a poetic passion. In 1872 he was made librarian to the Senate, and in this post he died. His works include *Poèmes Antiques* (1852); *Poèmes et Poésies* (1854); *Le Chemin de la Croix* (1859); *Poèmes Barbares* (1862); *Erinnyses* (1872); *Poèmes Tragiques* (1884); *Derniers Poèmes* (1899); *L'Apollonide*; with translations of *Theocritus* (1861), *Anacreon* (1861), *The Iliad* (1866), *The Odyssey* (1867), *Hesiod* (1871), *Eschylus* (1872), *Horace* (1873), *Sophocles* (1877), and *Euripides* (1885). See Bourget's *Nouveaux Essais de Psych. Cont.* (1886), Dorigny's *Leconte de Lisle* (1895), and Calmette's *Leconte de Lisle et ses Amis* (1902).

Lecourreur, ADRIENNE (1692-1730), French actress, celebrated alike for her brilliant gifts and the tragic ending of her life, was born near Châlons. Going to Paris, she quickly achieved success by her talent and beauty; and her life was filled with the loves of many famous men, including Marshal Saxe and Voltaire. Her death was attributed to poison administered by the Duchesse de Bouillon, a rival for Saxe's affections; whence the plot of Scribe and Legouvé's play *Adrienne Lecourreur*. See *Lettres D'Adrienne Lecourreur* (1892), and *Life*, in French, by Bourgeois (1896).

Le Creusot. See CREUSOT.

Lectionary, a book containing 'lessons' or portions of Scripture appointed to be read in the public service of the church in the

course of a year. The oldest Latin lectionary, ascribed to St. Jerome, was known as the *Comes* ('companion'), distinguished as 'major' and 'minor.' In the Anglican Church the form of the lectionary was fixed in 1661; but a royal commission was appointed in 1867 to consider its revision, and a new table of lessons was drawn up (1879).

Lecturer. In the Church of England persons in holy orders may be licensed by the archbishop or bishop, with the assent of the patron and incumbent, to officiate as lecturer or preacher in a parish church or in some chapel. A lecturer may be required by the bishop to perform other clerical duties in the parish or chapel. Some lectureships have been founded by statute or exist by ancient custom.

Lectures, formal discourses, written or unwritten, delivered upon any subject, especially one intended for the instruction of an audience. To nearly all universities lectureships are now attached in every branch of learning.

Of temporary lectureships, the principal are those connected with particular foundations by individual donors for the delivery of treatises advocating the views or subjects which the donors have favoured. Among these are the Bampton lectures at Oxford, the Boyle at London, the Hulsean at Cambridge, the Warburtonian at Lincoln's Inn, the Hibbert at Oxford and London, the Donnellian at Dublin, the Baird, Croall, Cunningham and Rhind lectures at Edinburgh, and, in connection with the Scottish universities, the Gifford and Burnett lectures. Then, in connection with special bequests, there are the annual Harveian, Croomian, and Plumpian 'orations.'

The 'University Extension' lectures, for which Professor

Max Müller was mainly responsible, were inaugurated at Oxford in 1885-6. (See article by Professor Müller in *The New Review*, vol. iii.) In Cambridge, also, there is a vigorous scheme of University Extension lectures, with affiliated centres at Derby, Exeter, Hull, Newcastle, Norwich, Plymouth (with Stonehouse and Devonport), Scarborough, and Sunderland. London University has a similar scheme.

Lecythidaceæ, a group of plants forming a subdivision of the order Myrtaceæ. They are natives of Guiana and other hot parts of S. America.

Leda, in ancient Greek legend, was the daughter of Thestius, and wife of Tyndareus, king of Sparta, to whom she bore Timandra, Clytaennestra, and Philonoe. Zeus visited Leda in the form of a swan, and by him she was the mother of Helen, Castor, and Pollux. The story is told by Homer, Euripides, and other ancient writers.

Ledbury, par. and mrkt. tn., England, co. of and 13 m. E. by s. of Hereford, on a declivity of the Malvern Hills; has valuable cider orchards and hop grounds. Roman remains are found in the vicinity. Pop. (1910) urb. dist. 3,358.

Lede, tn., Belgium, in East Flanders, 12 m. S.E. of Ghent; manufactures woollens and lace. Pop. 5,600.

Ledeberg, s.e. suburb of Ghent, Belgium. Pop. 14,500.

Ledochowski, MIECZYSŁAW, CARDINAL COUNT (1822-1902), Polish Roman ecclesiastic, born at Gorki in Galicia. For many years he resisted the repressive measures of the Prussian government against the influence of the Roman Catholic Church. The celebrated 'May Laws,' promulgated at the time of the *Kulturkampf*, were enforced in 1873, and Ledochowski was imprisoned (1874-6). After his release he

resided in Rome. From 1892 till his death he was prefect of the Propaganda. Pius IX. made him cardinal (1875).

Ledru - Rollin, ALEXANDRE AUGUSTE (1807-74), French barrister and politician, born at Fontenay. At the revolution of 1848 he became a member of the provisional government, and later a candidate against Louis Napoleon for the presidency. An unsuccessful attempt at rebellion forced him to seek refuge in England. In 1870 he returned to France under the law of amnesty. He was the author of *De la Décadence de l'Angleterre* (1850). His collected works appeared under the title *Discours Politiques et Ecrits Divers* (1879).

Leduc. See VIOLETT-LE-DUC.

Ledum, a genus of dwarf, hardy, evergreen shrubs, belonging to the order Ericaceæ. The flowers are white, and are borne in umbels. The chief species are *L. palustre*, the so-called wild rosemary, about eighteen inches in height, with its varieties *L. p. dilatatum* and *L. p. decumbens*; *L. latifolium*, taller and with broader leaves than *L. palustre*; and *L. glandulosum*.

Lee, riv., Co. Cork, Ireland, flows E. through the city of Cork to Queenstown harbour; length, 45 m.

Lee, a word meaning a sheltered place, and, in its nautical sense, those parts that are away from the windward side.

Lee, FITZHUGH (1835-1905), American soldier and diplomat, was born at Clermont, Virginia. On the outbreak of the civil war (1861) he joined the Confederate army. He became brigadier-general (1862), and major-general (1863). In 1865 he and his troops were forced to surrender to Grant. He became governor of Virginia (1885), and held consular and other appointments in Cuba (1896-1901), after which he retired

to Virginia. He wrote a life of his uncle, *Robert E. Lee* (1894).

Lee, FREDERICK RICHARD (1799-1879), English landscape painter, was born at Barnstaple. He is known as a clever exponent of English landscape and sea-scape. Among his works are *The Coast of Cornwall at the Land's End* and *The Plymouth Breakwater*. The National Gallery possesses four of his pictures, and there are other examples in S. Kensington Museum. See F. Lee's *Dr. Frederick Richard Lee* (1904).

Lee, JAMES PARIS (1831-1904), joint-inventor of the Lee-Metford and Lee-Enfield rifles, was born at Hawick, Scotland, whence his parents emigrated (1836) to Galt, Ontario, Canada. The English War Office adopted the Lee-Metford (1888), which after a short time was replaced by the Lee-Enfield.

Lee, ROBERT EDWARD (1807-70), American soldier, the great general of the Southern states in the American civil war. He served his apprenticeship in arms at West Point, like most of the leaders in the war of 1861-5. He took part in the Mexican war (1845), and on the outbreak of the civil war at once threw in his lot with that of his own state, Virginia, and was soon placed at the head of the Confederate armies. He did comparatively little in the campaign of 1861; but in that of 1862 he proved himself to be a great leader and a consummate soldier. His operations against McClellan around Petersburg and Richmond (1862) were distinguished for science, energy, and military resource. Lee then took the offensive and invaded Maryland. He retreated after an indecisive battle at Sharpsburg; but he completely defeated Burnside at Fredericksburg and Hooker at Chancellorsville.

In 1863 Lee again assumed the

offensive, swept past Washington, and invaded Pennsylvania, placing the Northern government in a state of panic. He fought a sanguinary battle at Gettysburg, but was defeated. This proved to be a turning-point in the war. Grant advanced to Richmond in the spring of 1864, and was defeated by Lee. Grant was, however, reinforced by Butler; Richmond was then invested, and Lee was practically cooped up within the Southern capital. In a fruitless attempt to escape from Richmond, Lee was surrounded and compelled to surrender, and the subjugation of the South was soon completed (1865). The veteran warrior survived until 1870, by no one more respected than by his distinguished adversary, General Grant, as one of the greatest soldiers of the 19th century. See Fitzhugh Lee's *General Lee* (1894), R. E. Lee's *Recollections and Letters of General Lee* (1905), and G. M. Adam's *Life of General Robert E. Lee* (1905).

Lee, SIR SIDNEY (1859), English man of letters, born in London; educated at the City of London School and Balliol College, Oxford; assistant-editor and afterwards editor of *The Dictionary of National Biography*. In this work a number of important articles are from his pen, including those on 'Queen Victoria' and 'Shakespeare,' both of which he has published, in revised and enlarged editions, as books. He has also written *Stratford-on-Avon* (1885), *Great Englishmen of the 16th Century* (1904), *Shakespeare and the Modern Stage* (1906), and *The French Renaissance in England* (1910), and edited 2 vols. of *Elizabethan Sonnets* (1904), also *Shakespeare's Poems* and *Pericles* (1905). He was knighted in 1911.

Lee, VERNON (1856), pseudonym of Violet Paget, English

writer of fiction and aesthetic criticism. She was born in France, and has spent the greater part of her life in and near Florence. Her published works include *Studies of the Eighteenth Century in Italy* (1880); *Belcaro* (1881); *The Prince of the Hundred Soups* (1883); *Ottolie* (1884); *Euphorion* (1884); *The Countess of Albany* (1884); *Miss Brown* (1884); *A Phantom Lover* (1886); *Baldwin* (1886); *Juvenilia* (1887); *Hauntings* (1890); *Vanitas* (1892); *Althea* (1893); *Renaissance Fancies and Studies* (1895); *Limbo* (1897); *Genius Loci* (1899); *Arriadne in Mantua* (1903); *Penelope Brandling* (1903); *The Spirit of Rome* (1905); *The Sentimental Traveller* (1907); *Gospels of Anarchy* (1908); and *Laurus Nobilis* (1909).

Lee, WILLIAM (? d. 1610), English divine, and inventor of the stocking-frame machine. He was born at Calverton, Nottinghamshire, educated at Cambridge University, and was in the ministry at Calverton (1589). His ingenious apparatus having met with scant recognition, Lee emigrated to France, and successfully set up his frames at Rouen.

Leech, JOHN (1817-64), English artist and caricaturist, born in London. At eighteen he revealed the bent of his genius in his *Etchings and Sketchings, by A. Pen, Esq.* (1835). These illustrated various phases and types of every-day London street life, humorously portrayed. The magazines of the period, such as *Once a Week*, *Bentley's Miscellany*, and other journals, also engaged his facile pencil; but it is through the pages of *Punch* that Leech is pre-eminently known. He joined the staff in 1841, and contributed singularly able drawings and political cartoons and skits until his death. He also illustrated A'Beckett's *Comic History of England* (1847-8) and

Comic History of Rome (1852), and Hood's *Comic Annual*. His *Punch* drawings were republished as *Pictures of Life and Character* (1854-69) and *Pencillings from Punch* (1864-5). See Frith's *Life* (2 vols. 1891), and Brown's *John Leech* (1882).

Leechee. See NEPHELIUM.

Leeches are modified annelids, or ringed worms, adapted to a special method of life. A typical example is *Hirudo medicinalis*, one of the medicinal leeches, still used in blood-letting. It lives in fresh water, and while rare in this country, is not uncommon in Germany, Bohemia, and Russia. The diet consists of the blood of vertebrates, to which the leech attaches itself by its suckers. Of these, one is posterior and im-perforate, the other anterior, with the mouth in the centre. Within the mouth lie three triangular tooth-plates, by means of which a small triradiate incision is made in the skin of the animal attacked. Opening into the mouth are the ducts from certain glands whose secretion prevents the clotting of the blood. Leech-extract is now used medicinally as a haemostatic. Leeches usually move by attaching alternately the anterior and the posterior suckers, somewhat after the fashion of a 'looping caterpillar,' but they can also swim by movements of the whole body. The eggs are laid in cocoons in damp earth.

Leeds. (1.) Munic., parl., and co. bor., in the West Riding of Yorkshire, 23 m. w.s.w. of York, and an important railway centre. It is situated on the Aire, by which it has water communication with the Humber, while the Leeds and Liverpool Canal connects it with the western seaboard. The town hall, with fine Corinthian columns, was opened by Queen Victoria in 1858. The Yorkshire College, constituted 1874, became in 1887 one of the constituent

colleges of the Victoria University, Manchester, and was in 1904 established as a self-contained university. It includes textile and art departments, founded by the Clothworkers' Company, affording practical instruction in the various branches of cloth manufacture. The university was attended in 1910 by 1,200 students, and has numerous scholarships. The medical department occupies a separate building. Kirkstall Abbey, 2½ miles from the city, belonging to the corporation of Leeds, is probably the best preserved of English monastic houses, with the exception of Fountains Abbey. The borough returns five members to Parliament. Leeds is the chief centre of the woollen industry in England. This industry was established in the middle ages; but the modern development of Leeds dates from the introduction of steam-power machinery towards the close of the 18th century. Other large industries include locomotives, machinery, heavy iron and steel goods of all kinds, chemicals, glass, printing, leather goods, artificial silk, and pottery. Leeds was the first city in the kingdom to adopt the system of railless electric traction (1911). Area, 21,593 ac. Pop. (1911) 445,568. See Taylor's *Churches of Leeds and Neighbourhood* (1875); Wardell's *Antiquities of Leeds* (1853); and Robinson's *Relics of Old Leeds* (1896). (2.) Village, Canada, in Megantic co., Quebec, 35 m. s. of Quebec city. Pop. 1,500.

Leeds. THOMAS OSBORNE, DUKE OF (1631-1712), English statesman, was the son of Sir E. Osborne, Bart. of Kiveton, Yorkshire, a prominent royalist. He became treasurer of England (1673), and Earl of Danby (1674); and laid Oates's plot before the House of Lords (1678). A zealous Protestant, in political life he is stated to have been 'greedy'

of wealth and honours, corrupt himself, and a corrupter of others.' Charles II. held him in high favour, and he acquired great power. Accused of intrigue and bribery, he was committed to the Tower, and remained there for nearly five years. At the revolution, declaring himself an adherent of William of Orange, he received promotion as president of the council and Duke of Leeds (1694); but in the following year he was again impeached on a money question. He afterwards retired into private life (1699). See his *Memoirs* (1710), and *Life* by Courtenay (1838).

Leek (*Allium porrum*), a liliaceous plant long cultivated for the lower part of its leaves, which form a thick succulent stem, much used in soups and stews, especially in French cookery. The wild plant grows in the east of Europe and adjacent countries of Asia. The leek is the emblem of Welshmen, and is worn on St. David's Day, March 1.

Leek. (1.) Mrkt. tn., Staffordshire, England, near the Churnet, 10 m. N.E. of Hanley. Manufactures sewing silk, waterproof silk, braids, laces, and covered buttons. The town charter was granted in 1208. Pop. (1911) 16,665. (2.) Town, Netherlands, prov. of and 10 m. w.s.w. of Groningen. Pop. (1910) 6,027.

Leeman's Acts, the name sometimes given to the Sale of Shares Act (1867) and the Borough Funds Act (1872). The former act provides that the number of each share must be inserted in all contracts for the sale of shares in joint-stock banking companies, while the latter act enables the costs of promoting and opposing private bills in Parliament to be charged on local and borough funds.

Leer, tn., Prussian prov. of Hanover, 14 m. s.e. of Emden; has brick works, iron foundries,

distilleries, paper factories, and shipping trade. Pop. (1910) 12,677.

Leerdam, tn., Netherlands, in South Holland, 15 m. s. of Utrecht; has glass-works. Pop. (1910) 6,717.

Lees, par. and tn., Lancashire, England, 2 m. s.e. of Oldham, of which it is practically a suburb; has cotton mills. Pop. (1911) 3,650.

Lees, SIR JAMES CAMERON (1834), Scottish divine, born in London. He became successively minister of Carnock, of Paisley Abbey, and of St. Giles's Parish, Edinburgh, which charge he held for many years. He was chaplain-in-ordinary to King Edward VII., and since 1887 has been Dean of the Order of the Thistle and of the Chapel Royal of Scotland. His chief works include *History of the Abbey of Paisley* (1878), *History of St. Giles's* (1889), and *A History of the County of Inverness* (1897).

Leet. See COURT LEET. The word is also used in connection with elections or appointments to an office. A few persons, on one of whom the final choice is to fall, are selected from a large number of candidates, and the list is called a 'short leet.'

Leeuwarden, tn., Netherlands, cap. of prov. Friesland, 26 m. w. of Groningen; contains a Frisian museum, and a royal palace (1587-1747). It has manufactures of linens, iron, copper, and lead goods, musical instruments, boats, vehicles, and glass. Pop. (1910) 36,522.

Leeuwenhoek, ANTON VAN (1632-1723), Dutch microscopist, who made an extraordinary number of discoveries with relatively very imperfect instruments. He lived and died at Delft, but was a member both of the Royal Society of London and of the Paris Academy of Sciences. Most of his observations are described in the

Philosophical Transactions of the former and the *Memoirs* of the latter body. He studied the circulation of the blood in the frog's foot, thus confirming Harvey's discovery; and made some detailed observations on rotifers, as well as studied a vast number of organic substances and tissues, such as ivory, hair, muscle, and the skin. He attempted to disprove spontaneous generation, and succeeded in proving the natural generation of weevils in wheat, of eels, aphides, mussels, and some other forms, at that time supposed to rise *de novo* from inorganic substances. See *Life*, in Dutch, by Haaxman (1875).

Leeward Islands, groups of the Caribbean Is., West Indies. They are divided into the presidencies of Antigua (including Barbuda and Redonda), St. Kitts (with Nevis and Anguilla), Dominica, Montserrat, and the Virgin Is. They are under British rule, except St. Thomas, Santa Cruz, and St. John in the Virgin Is., which belong to Denmark. The islands are of volcanic origin, and contain some lofty peaks, the highest being the Morne Diablotin (5,314 ft.) in Dominica. Off the west coast of this island Admiral Rodney gained a victory over the French. Sugar and molasses, cotton, citrate of lime, cacao, phosphates of lime and alumina, and sulphur are the chief products; lime juice is exported from Montserrat and Dominica. The total value of the imports (1909) was £471,026; that of the exports, £420,800. In 1910 a Royal Commission on Trade Relations between Canada and the West Indies met in the colony, and visited the chief islands. The areas and populations of the larger islands are:—Antigua, 108 sq. m.; pop., with Barbuda and Redonda, 35,000. St. Kitts, 65 sq. m.; pop. 30,000. Nevis, 50 sq. m.; pop. 12,800.

Dominica, 291 sq. m.; pop. 29,000. Montserrat, 32 sq. m.; pop. 12,200. Total area of British islands, 701 sq. m.; pop. 128,000. The chief tn. is St. John's, on Antigua.

Lefebvre, FRANÇOIS JOSEPH, DUC DE DANZIG (1755–1820), marshal of France, born at Ruffach, Alsace. He assisted Napoleon in overturning the Directory (1799); and to mark his successful conduct of the siege of Danzig (1807), he was created Duke of Danzig. He served in the Peninsular war, and throughout the Russian campaign (1812), and assisted against the allied armies before Paris. See Wirth's *Le Maréchal Lefèbvre* (1904).

Lefebvre, JULES JOSEPH (1836), French painter, born at Tournan (dep. Seine-et-Marne); studied at Paris under Cogniet, and won the Prix de Rome (1861). He distinguished himself especially as a painter of the nude, of which his allegorical picture of *Truth* (1870) in the Luxembourg at Paris is a good example. His style in his later works—*e.g.* *Lady Godiva* (1890), *A Daughter of Eve* (1892), *Yvonne* (1901)—has become somewhat modified.

Lefevre, GEORGE JOHN SHAW. See SHAW-LEFEVRE.

Leffler, ANNA CARLOTTA. See EDGREN.

Lefkosia. See NICOSIA.

Lefort, FRANÇOIS (1656–99), Russian general and statesman; born at Geneva, of Scottish stock. He emigrated to Russia (1675), where he ultimately became the favourite of Peter the Great, in whose service he reconstituted the army and navy. See *Life*, in German, by Possehl (1866).

Lefroy, MOUNT a summit of the Rocky Mts., Alberta, Canada, near Laggan. Alt. 11,600 ft.

Leg. All vertebrates above fishes have the limbs constructed on the same plan. Each limb is divided into four parts, named as

sumption is that the legacy is in payment of the debt; but this presumption is easily rebutted—for example, by showing that the legacy is less than the debt. A legatee, in the absence of directions to the contrary, is entitled to a legacy within one year of the testator's death. If payment is delayed beyond the year 4 per cent. interest then begins to run on the amount. An annuity runs from the day of the testator's death. A legacy to an executor is, *prima facie*, conditional upon acceptance of the executorship. See LAPSE, ABATEMENT, DEATH DUTIES, and ELECTION. See also Jarman *On Wills* (6th ed. 1909), and Theobald *On Wills* (7th ed. 1908).

Legal Education, COUNCIL OF. The Council of Legal Education is an unincorporated body consisting of delegates appointed by each of the four Inns of Court (Lincoln's Inn, the Inner and Middle Temples, and Gray's Inn), from among its bachelors, five being appointed by each inn. The council was established in 1852, and is entrusted with the power and duty of superintending the education and examination of students, and granting certificates of fitness for call to the bar. The council publishes an annual *Calendar*, containing information as to the admission of students, lectures, examinations, and call to the bar.

Legal Fiction. See FICTION, LEGAL.

Le Gallienne, RICHARD (1866), English author and journalist, was educated at Liverpool College. Among his works are *Volumes in Folio* (1888), *George Meredith: some Characteristics* (1889); *The Book Bills of Narcissus* (1891); *English Poems* (1892); *The Religion of a Literary Man* (1893); *Robert Louis Stevenson, and other Poems* (1895); *The Quest of the Golden Girl* (1896);

The Life Romantic (1900); *An Old Country House* (1902); *Painted Shadows* (1907); *Little Dinners with the Sphinx* (1909); and *Attitudes and Avowals* (1911).

Legal Tender. See TENDER. **Legato,** a term in music signifying that the passage must be played very smoothly, the notes succeeding each other with the least possible break.

Legazpe, or LEGASPI, MIGUEL LOPEZ (c. 1510-72), Spanish soldier, who led the Spanish expedition for the conquest of the Philippines (1564). This he successfully accomplished, and founded Manila (1571), naming the island group after the Spanish king, Philip II.

Legend was at first applied to written chronicles, or narratives, especially those of the mediæval church. What was pre-eminently known as 'The Legend' was the 13th-century compilation of the lives of saints, by Jacobus de Voragine, archbishop of Genoa, more popularly spoken of as 'The Golden Legend,' or *Legenda Aurea*. *The Legend of the Three Kings* was a religious drama or miracle play, of which the earliest MS. appears to belong to the 11th century. The term 'legend' was also applied to any inscription or motto, as it still is by numismatists. Thus, the word was primarily used to denote something read, and it is in this original sense of a written narrative that Scott employs the word in his *Legend of Montrose*, although doubtless keeping in view its later meaning. See FOLKLORE.

Legendre, ADRIEN MARIE (1752-1833), French mathematician, born at Toulouse, went to Paris, and after attracting the notice of D'Alembert, obtained the chair of mathematics at the military school. For his excellent paper on *L'Attraction des Ellipsoïdes*, Legendre was in 1783

admitted member of the Académie des Sciences, and appointed to the Bureau des Longitudes. In his *Nouvelles Méthodes pour la Détermination des Orbites des Comètes* (1806) he invented the rule of the 'least square of errors,' a mathematical device which has since become familiar. His *Éléments de Géométrie* (1794) is well known, especially in France. His greatest work, *Traité des Fonctions Elliptiques* only appeared in 1825-32.

Legge, JAMES (1815-97), English sinologist, born at Huntly, Aberdeenshire; was sent by the London Missionary Society to the East (1839), being stationed at Malacca, and afterwards for many years at Hong-kong. He achieved world-wide reputation through his writings on China, particularly by his edition of the Chinese classics, begun in 1841. He was appointed professor of Chinese language and literature at Oxford (1876). His other works include *The Notions of the Chinese concerning God and Spirits* (1852); *Life and Teaching of Confucius* (1867); *The Religions of China* (1880); and *Record of Buddhistic Kingdoms* (1886). See *Life* by his daughter (1905).

Leghorn (It. *Livorno*; anc. *Labronio*), fort. seapt. and city, prov. Leghorn, Tuscany, Italy, on the coast of the Tyrrhenian Sea, 50 m. w.s.w. of Florence; is situated on a low and somewhat marshy plain. In the 11th century it came into the hands of Pisa. Towards the close of the 14th century it was taken by Visconti of Milan. The French occupied it from 1404 to 1407. From the latter date it belonged to the Genoese, who in 1421 sold it to the republic of Florence. In that year there were only 1,200 inhabitants. Much of its prosperity, which dates from 1421, was due to

the energy and enterprise of the Medicean grand-dukes, who recognizing the value of its situation, largely extended and beautified the town. New harbour works were inaugurated in 1910. It exports hemp, hides, marble, olive oil, coral, candied fruit, wine, soap, boracic acid, mercury, hats, etc.; and imports coal, fish, tobacco, wheat, coffee, sulphate of copper, raw hides, cotton, wool, etc. Shipbuilding, glass-making, copper and brassfounding are the principal industries. In 1909 the exports were valued at £2,533,066, and the imports at £5,926,124. In 1910 a trunk line of railway was opened which puts Leghorn in direct communication with Turin, Milan, Genoa, Pisa, and Rome. Pop. 125,000. The prov., comprising the city of Leghorn and the isl. of Elba, has an area of 133 sq. m., and a pop. of 132,000.

Legion, in Latin *legio*, was the name of the divisional unit of a Roman army. The number of soldiers contained in a legion varied at different epochs, from 3,000 under the early kings, 4,200 after the time of Servius Tullius, 5,000 during the second Punic war, to 6,000 after the time of Marius (100 B.C.); 300 cavalry also were attached to each legion. Before Marius each legion was divided into thirty maniples; he introduced a new division into ten cohorts, and also gave each legion a silver eagle as a regimental standard. In republican times four legions were an ordinary yearly levy; at the death of Augustus, in 14 A.D., the regular standing army consisted of twenty-five legions.

Legion of Honour, French order of merit, created in 1802 by Napoleon, when first consul, with the view of specially marking exploits and services in the military and civil departments. Napoleon himself was first grand

master. Its present constitution comprises Knights Grands Croix, Grands Officiers, Commandeurs, Officiers, and Chevaliers, the number of the last being unlimited. The head of the republic is the grand chancellor of the order.

Legislation, THE SOCIETY OF COMPARATIVE. This society was formed in England in 1894 to promote the comparative study of law, by collecting evidence as to how the numerous legislatures of the world deal with the same subjects. The objects of the society are both practical and scientific, and special attention is paid to the laws which are in their effects international—e.g. mercantile law. The society publishes *The Journal of Comparative Legislation*.

Legislation and Legislative Processes. Legislation may be defined as the enunciation of general rules of conduct in express terms with the imposition of penalties for disobedience.

The process through which every complete legislative act or statute must necessarily pass may be analyzed into the three stages of proposal, criticism, and acceptance.

The power of proposing or initiating legislation, in most of the states of the ancient world, could be exercised only by a magistrate. In ancient times a change in the law was looked upon as a rare expedient of doubtful piety, which could not safely be left to lay enterprise. In modern days similar restrictions have existed, and still exist. In the early constitutions of the Australian colonies no one was allowed to propose legislation but the governor. The same rule, it is believed, prevails at the present day in the smaller crown colonies of the British empire. Before the appearance of representative assemblies in mediæval Europe, the kings jealously reserved to them-

selves the prerogative of proposal. In Russia, until 1711, the right to propose legislation was with the Czar alone; even now its exercise is jealously confined to the senate and the ministers. The demand by the Finnish Estates of the right to initiate legislation in their own Diet was one of the steps which provoked the suspension of the constitution. The Irish Parliament during the existence of Poynings' Act, the Convocations of Canterbury and York since the reformation, are well-known examples of legislative bodies having no power to initiate legislation. The parliamentary right of proposing legislation came in through the side path of petitioning. Petitions by individuals or small communities to government authorities are frequent in all stages of political organization; but these petitions are, in the vast majority of cases, of a purely personal character, and a favourable response produces merely an executive order. It was only when the practice of petitioning was taken up by the representative bodies that the right of initiating legislation was extended.

The period of criticism and discussion is the next stage in the process of legislation. This right has, at different times, been exercised by different authorities. The intensely democratic character of the Athenian constitution is evinced by the curious process known as *nomothesia*, by which the question of revision and amendment was discussed by advocates for and against the existing law before a body of *heliasts* or jurors. But this was at a very advanced stage of Athenian politics. As a general rule, no discussion took place in the popular assemblies of the ancient world. Measures submitted to them had been carefully considered by an aristocratic

cratic body, a *bouls* or senate; and the function of the assembly was to say 'yes' or 'no.' Such was the character of the early assemblies of the Teutonic kingdoms, and even, it can hardly be doubted, of the earliest representative parliaments of mediæval Europe.

After the stage of criticism and discussion has been passed, and the measure is ready for completion, it not infrequently happens that the formal assent of some external authority has to be obtained, in order to render it binding. This is more especially the case when the proposal and framing of the measure have been the work of a representative body, as in the examples of the Parliaments of Western Europe and Australia, and the Congress of the American republic. But it has also happened in bureaucratic systems, such as the French monarchy of the 17th and 18th centuries, when the *parlements* or supreme law courts of France claimed the right to register, or to refuse to register, the royal edicts; and a similar provision may be found in some of the earlier Australian constitutions, in which enrolment by the chief-justice was a necessary preliminary to the enforcement of an ordinance. Usually the right of acceptance involves the unlimited right of rejection; but the president of the United States, and the governors of the respective states, although in most cases vested with the so-called 'veto,' cannot maintain it against the determined resolution of the houses expressed by substantial majorities. The most novel, and in some respects important, form of the accepting power is that practised regularly in Switzerland, and rarely (and only on certain questions) in France and the United States, known as the *referendum*.

Hardly less important than the proper wording of a statute is the publicity with which its terms are announced. In any given country the persons actively interested in politics and legislation are comparatively few. Once the right of parliamentary discussion is secured, these persons have little difficulty in following the course of legislation. But all are interested in obeying the laws; and to assume that all persons will follow the course of debates in Parliament or the press is to make a somewhat excessive demand on ordinary human nature. Accordingly, enlightened reformers have begun to urge, hitherto without much success, that a machinery for bringing home the actual provisions of legislation to the public is greatly to be desired.

In conclusion, it may be noticed that the growth of public business in representative assemblies has led to the development of an important system of indirect legislation. Parliaments are now content, in many cases, to lay down general provisions, leaving the special application of them to smaller or less-occupied bodies, and even to individual ministers. The Elementary Education Acts, the Judicature Acts, the Public Health Acts, are striking examples of this policy.

See Bryce's *Studies in History and Jurisprudence* (1901); Ilbert's *Legislative Methods and Forms* (1901); Lowell's *Governments and Parties in Continental Europe* (1896).

Legislature. The legislature is the law-making authority of a country or state. The highest form of legislature is exemplified by the Parliament of the United Kingdom. The King in Parliament—*i.e.* the King acting by and with the advice and consent of the Lords Spiritual and Temporal and Commons in Parlia-

ment assembled—can make or unmake any law whatsoever, including laws which alter the constitution of the realm. Parliament is therefore said to be a sovereign legislature, or to be at once a legislative and constituent assembly. In countries such as France and Belgium the power of the legislature is limited by the constitution, and is therefore not sovereign. This subordinate character of a legislature is still more apparent in the case of the British colonies, for the powers of their legislatures are limited and defined by general or special statutes of the Imperial Parliament, and might be altered by the same authority. Many bodies not called legislatures have minor legislative powers, which vary in extent and importance from the large and important powers of such a body as the Legislative Council of India down to the mere power of making by-laws possessed by a municipal corporation or a railway company. See Dicey's *Law of the Constitution* (9th ed. 1902), and Todd's *Parliamentary Government in the British Colonies* (2nd ed. 1904).

Legitim is the share of movable property which, by the law of Scotland, passes on the death of a father or mother to the children, and is equally divided among them. If there be a surviving parent, the share amounts to a third of the movables; otherwise it is a half. The right may be extinguished by antenuptial contract, or by the child's own act. In the latter case, known as *forisfamiliation*, the right passes to the other children, if any.

Legitimacy. A child born in wedlock in England is presumed to be legitimate in the absence of evidence to the contrary. The peculiar difficulty of the subject of legitimacy is that a man may be legitimate for one purpose and not for another. But the ques-

tion may be determined by the following rules:—(1.) For the purpose of intestate succession to immoveable property in England a man must be legitimate by the law of England. Thus, a child born out of wedlock, and legitimated by the subsequent marriage of his parents, who are domiciled in Scotland, cannot succeed to real estate in England. (2.) For the purpose of intestate succession to movable property in England a person must be legitimate by the law of his domicile; and a child born of parents domiciled in Scotland at the date of the birth, but in England at the date of the marriage, is illegitimate for this purpose in England. (3.) In any event, and this is so far an exception to Rule 2, English law refuses to recognize the legitimacy of children for purposes of intestate succession, if that legitimacy is repugnant to English morality. The law of ancient Egypt approved of marriages between brothers and sisters. The children of such a marriage, even though the place of domicile was Egypt, could not be regarded as legitimate in England; but they might be included under the term 'children' in a will, by English law. (4.) As to the practice of foreign countries, a distinction must be drawn between statutes which declare a child legitimate and those which declare that he may succeed on intestacy to his parents' estate: for example, in Italy an illegitimate child, if recognized by the father, may succeed to the estate on intestacy, but he is not therefore legitimate either by the law of England or that of Italy. In Scotland a child is legitimated by the subsequent marriage of his parents, provided there was no legal obstacle to such marriage at the date of birth, or perhaps conception. A change of domicile between birth and marriage does not affect this principle. A child

may also be legitimated by royal letters of legitimation, which are now almost obsolete. See MARRIAGE and DOMICILE; also Foote's *Private International Jurisprudence* (3rd ed. 1904); and for Scotland, Fraser's *Parent and Child* (1866).

Legitimists, THE. After the overthrow of the Bourbon monarchy in 1830, and the accession of the Orleanist Louis Philippe, a party arose which favoured the return of the Bourbons. The revolution of 1848, however, placed Napoleon III. at the head of affairs; but on his fall (1871) the hopes of the Legitimists were raised. The Comte de Chambord, grandson of Charles X., was their head, and they counted upon the support of Marshal MacMahon and the reaction against communism; but the comte had not the gifts of a leader, and ruined his chances by obstinacy and want of tact. See BOURBON FAMILY.

Legnago, fort. tn., prov. Verona, Lombardy, Italy, on the Adige, 25 m. E. of Mantua; was one of the four fortresses of the Quadrilateral. Pop. of comm. 15,000.

Legnano, tn., prov. Milan, Lombardy, Italy, 17 m. N.W. of Milan. Manufactures cotton, silk, thread, and machinery. Here in 1176 Frederick Barbarossa was defeated by the forces of the Lombard League. Pop. (comm.) 17,500.

Legnone, MONTE, the highest summit of Lombardy, Italy. It lies E. of Lake Como and S. of the Adda. Alt. 8,565 ft.

Legouvé, ERNEST (1807-1903), French dramatist and author, attracted attention by his *Histoire Morale des Femmes* (1849) and *La Femme en France au XIX Siècle* (1864), followed by *La Science de la Famille* (1867) and *Messieurs les Enfants* (1868). Among his dramatic pieces are *Adrienne Le-couvreur* (written with Scribe, 1849); *Bataille de Dames* (also

written with Scribe, 1851); *Médic* (1856); *Les deux Reines de France* (1865); and *La Considération* (1880). More works on domestic questions were followed by *Sous-ante Ans de Souvenirs* (1886-7).

Legros, ALPHONSE (1837), French painter, etcher, and sculptor, born at Dijon. He was naturalized in England, and for seventeen years was Slade professor of art at University College, London, succeeding Poynter in the office. The Manchester and Tate Galleries have good examples of his art. See Bénédite's *Alphonse Legros* (1901).

Legume, the name given to the fruit of plants belonging to the Leguminosæ. It consists of a solitary two-valved carpel, bearing its seeds along the ventral suture. It dehisces by dorsal and ventral sutures, or by either.

Legumin, or **VEGETABLE CASEIN**, is an albumin which occurs in the seeds of leguminous plants. It can be coagulated by acids, redissolves in alkalis, and so closely resembles the casein of milk that a kind of cheese is prepared in Japan from an extract containing it obtained from the soy bean.

Leguminosæ, a natural order of plants containing an enormous number of species, including some of our most beautiful flowering plants, and also some of great economic value. The flowers have a five-cleft calyx, and usually five petals, of which the upper one, or standard, is the largest, the two lower ones forming a keel, and the two side ones wings. From their general resemblance to butterflies the flowers are said to be papilionaceous. The pea, bean, vetch, whin, broom, trefoil, and sainfoin are well-known species.

Lègya, or LAIHKA, state in the E. of the Southern Shan States, Burma, consists for the most part of a plateau. It produces

rice, cotton, and sugar-cane. Area, 1,433 sq. m. Pop. about 26,000. The capital, Laihka, 130 m. s.e. of Mandalay, manufactures iron and lacquer ware.

Leh, tn., Kashmir, India, cap. of Ladakh, is a walled city, 2 m. from the r. bk. of the Indus, about 210 m. N. by E. of Simla. The town stands in an open valley, about 11,500 ft. above sea-level. Leh is the starting-point of the caravan routes into the Pamirs and Tibet, and commands the entrances to the several passes to the N. and E. It is the headquarters of a British political officer. Chief export, shawl wool. Pop. 4,000.

Le Havre. See HAVRE.

Lehe, comm., Prussian prov. of Hanover, 2 m. N. of Bremerhaven, with market-gardening, brick-making, brewing, saw-milling, and flour-milling. Pop. (1910) 37,454.

Lehighton, tn., Carbon co., Pennsylvania, U.S.A., 20 m. N.W. of Allentown. Pop. (1910) 5,316.

Lehigh Valley Railroad Company. This company was incorporated in 1846, and the original line opened for business in 1855. The main line extends from New York Harbour, at Jersey City, N.J., to Buffalo, N.Y., with branches reaching each of the anthracite coal fields of Pennsylvania. The company, by means of its steamers, barges, etc., extends its freight and coal traffic to the principal ports on the Great Lakes, and also its coal traffic to New England ports. The total length of first track on the system, in 1910, was 1,433 miles. The capital stock of the company (which heretofore consisted of common stock, \$40,334,800, and preferred stock, \$106,300 = \$40,441,100) in September 1910 was increased to \$60,661,650 by subscriptions of the stockholders in the proportion of 50 percent of their holdings

at par (\$50 per share). The company owns 874 locomotives, 520 cars devoted to passenger service, 44,158 cars devoted to freight service, and 639 cars in road service. The floating equipment of the company consists of 278 vessels of various kinds.

Lehmann, RUDOLPH (1819-1905), German painter, born near Hamburg. After a sojourn in Paris and Rome he settled in London (1848), and speedily became popular as a portrait painter. Among his best-known pictures, apart from portraits, are *Sixtus V. Blessing the Pontine Marshes*, in the museum at Lille; *Early Dawn on the Pontine Marshes*; and *A Reaper whose Name is Death*. He has published *An Artist's Reminiscences* (1894), and *Men and Women of the Century* (1896).

Lehrte, tn., Prussia, prov. of and 10 m. E. of the city of Hanover. Pop. (1910) 8,561.

Leiah, tn., Punjab, India, 60 m. N.N.W. of Multan. Pop. 16,000.

Leibniz, GOTTFRIED WILHELM, FREIHERR VON (1646-1716), German philosopher, born at Leipzig; was of Bohemian descent, the son of a professor of philosophy in the University of Leipzig. He was educated at the universities of Leipzig and Jena, and received a doctorate in law from the University of Altdorf, where he declined the offer of a professorship. After leaving Nuremberg, he entered the service of the elector and archbishop of Mainz (then the most powerful man in the empire). In 1672 Leibniz went to Paris, where, in the course of a four years' residence, he had much friendly intercourse with Arnauld, Huygens, Malebranche, and other leading mathematicians and philosophers of the time, and made a profound study of mathematics, which ultimately bore fruit in his discovery of the *Differential Calculus* in 1676 (pub-

lished 1684). Newton was in possession of a similar method as early as 1665 (published in 1693); and as Leibniz, early in 1673, visited London, where he had many scientific discussions with Oldenburg (secretary of the Royal Society), Robert Boyle, and others, it was for a long time maintained by English scientists that Leibniz plagiarized the great discovery of Newton. There is, however, nothing to confirm this, and it is much more probable that each discovered the method independently. The form which Leibniz gave to the calculus, and the names and the signs which he used, have come to be universally employed in preference to those of Newton. In 1676 Leibniz became librarian to the Duke of Brunswick at Hanover, a post which he held for the remainder of his life. During the Hanover period of his life, Leibniz did most of the work which earned for him the name of 'the greatest polymathist since Aristotle.' He developed his system of metaphysics, which, however, he did not formally publish, but indicated in occasional papers for scientific journals, and in correspondence with other thinkers. He wrote the one book of his which was published in his lifetime, the *Théodicée*, a work of great learning, intended to maintain against the arguments of Bayle (of *Dictionary* fame) the harmony of faith and reason, and to ' vindicate the ways of God to man.' He wrote the *Nouveaux Essais sur L'Entendement Humain*, a long dialogue in which he discussed Locke's *Essay* chapter by chapter. He died unhonoured by his contemporaries, and it was only in later times that his greatness came to be fully appreciated.

Perhaps the dominant feature of Leibniz's thinking was the effort to incorporate in his phi-

losophy the best elements of earlier thought. He maintained that on the whole the philosophers of the past had been right in what they affirmed, wrong in what they denied. More particularly he endeavoured, in his doctrine of substance (his *Mondology*), to reconcile or combine the principles of the Cartesian philosophy with the Aristotelian tradition of the scholastics. Plato, however, was his favourite philosopher among the ancients, and under Plato's inspiration he endeavoured to establish the metaphysical priority of final to mechanical causes in the interpretation of the universe. This is the secret of his doctrine, that the universe is ultimately a system of monads or spiritual automata, each being (in dependence only upon God) the cause of all the phenomena which make up its life, each reflecting (' mirroring'), with more or less clearness, the whole universe, and all thus agreeing in a 'pre-established harmony,' which explains the unity of the world, in spite of the diversity which might seem inevitably to result from the perfect spontaneity of each of the monads, its elements. Against Locke he maintained that ideas are at once innate and, in a sense, *a posteriori*; and in some of his speculations he anticipated to a certain extent the ideas of Kant. In his *Théodicée* Leibniz endeavoured to explain the evil of the world by the theory that it arises from the inevitable imperfections of creatures in a system which is not absolutely perfect, but which is 'the best of all possible worlds.' The influence of Leibniz upon later thought has been great, and is especially marked in the philosophies of Herbart, Lotze, and Renouvier. Leibniz was also the first to draw attention to the psychological importance of un-

conscious or subconscious mental processes; and some of his suggestions on biological and physiological questions have been singularly fruitful. Nearly all the chief sciences or branches of learning owe something to his wide curiosity and his pregnant reflection.

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lung der Liebnizischen Monadenlehre (1891).

Leicester (Sax. *Legerceastræ*), munic., co., and parl. bor., in Leicestershire, England, on the Soar, 27 m. s. of Nottingham. The principal manufactures are worsted hosiery, boots and shoes, elastic web, and agricultural implements. The town occupies the site of the Roman *Ratae*, and was one of the 'five burghs' of the Danes. Leicester returns two members to Parliament. Pop. (1911) 227,242.

Leicester, ROBERT DUDLEY, EARL OF (?1532-88), favourite of Queen Elizabeth, was fifth son of the Duke of Northumberland. Introduced to court life at an early age, he was the companion of Edward VI. and Princess Elizabeth, and in 1550 married the ill-fated Amy Robsart. On Edward's decease he promoted the claims of his sister-in-law, Lady Jane Grey, as queen, was brought to trial, but ultimately pardoned. With Elizabeth's accession his influence increased. Of gracious presence, a skilled courtier, and held in high favour by the queen, he was regarded as her lover. He was created an earl in 1564. See *Leicester's Commonwealth*, ed. by Burgoyné (1904), and Bekker's *Elizabeth and Leicester* (1890).

Leicester, THOMAS WILLIAM COKE, EARL OF (1752-1842), English agriculturist. A zealous Whig and a staunch supporter of Fox, he represented Norfolk from 1776 to 1833. Coke consistently upheld rural and agricultural interests, advocating improved methods of farming, particularly in wheat-growing and in the breeding of cattle. He was raised to the peerage in 1837. See *Coke of Norfolk*, by A. M. Stirling (1907).

Leicestershire, inland co. of England, in the Midlands. The surface is varied, valleys and plains alternating with low hills, commonly of gentle slope, rugged

in the Wolds of the N.E. and in Charnwood Forest (long deforested), where is Bardon Hill, 912 ft. The principal rivers are the Soar, with Wreak and other tributaries, draining the centre; Trent in N.W., forming part of the N. boundary; and Avon and Welland in S.E. Cattle and sheep are reared, and the county has long been noted for wool and cheese (Stilton). Oats, wheat, turnips, and mangold are the principal crops. Coal and iron are extensively worked, the former in the N.W.; granite and slate are quarried in Charnwood, lime near Barrow-on-Soar, and clay in various parts. Manufactures include hosiery (Leicester, Loughborough, Hinckley), boots and shoes, silk plush, elastic web, bricks, and pottery. Melton Mowbray, Market Harborough, and Loughborough are famous hunting centres. The county returns four members to Parliament. Area, 859 sq. m.; pop. (1911) 481,115.

Leichardt, suburb, 3 m. w. of Sydney, New South Wales. Pop. 17,500.

Leichhardt, FRIEDRICH WILHELM LUDWIG (1813-'48), Australian explorer, born at Trebatsch, S.E. of Berlin; went to Australia (1841), and directed an overland route expedition from Darling Downs to Port Essington. In 1847, starting from Queensland with the intention of crossing Australia from east to west, he was never again heard of. See *Dr. L. Leichhardt's Briefe an seine Angehörigen* (1881), and *Life*, in German, by Zuchold (1856).

Leichlingen, tn., Rhenish Prussia, 12 m. s.s.w. of Elberfeld; manufactures textiles. Pop. (1910) 7,042.

Leiden. See LEYDEN.

Leigh, munic. bor., Lancashire, England, 7 m. S.E. of Wigan. Industries: coal-mining, cotton and silk manufactures, brewing,

agricultural implements, and foundries. Pop. (1911) 44,109.

Leigh-on-Sea, par. and small seap.t., Essex, England, on the Thames, 3 m. w. of Southend; has oyster and shrimp fisheries, and is a favourite resort of Londoners. Pop. (1911) 7,716.

Leighton, FREDERIC, BARON LEIGHTON OF STRETTON (1830-96), English historical painter and sculptor, born in Scarborough. When fifteen he entered the Royal Academy at Berlin, thereafter proceeding to Brussels, Frankfort, Paris, Florence, and Rome. He was twenty-five when he exhibited his first picture in the Academy (1855), *Cimabue's Madonna carried in Procession through Florence*, which created a profound sensation in the art world of London, and was purchased by Queen Victoria. From that year until his election to the presidency of the Royal Academy in 1878, and through his long tenure of that office, his success was unbroken. He was raised to the peerage (1876), and received many other honours. Throughout his art life there was a growing love of classic subjects, such as his *Daphne*, *Phryne*, and *The Garden of the Hesperides*. He died in London, and was buried in St. Paul's Cathedral. In addition to his oil paintings, he did fine work in sculpture and in black and white, executed the important frescoes of *The Arts of War and Peace* in the South Kensington Museum, and of *The Wise and Foolish Virgins* in St. Michael's Church, Lyndhurst. He is also well represented in the Birmingham and Tate Galleries, and at Leighton House, Kensington, now belonging to the nation. Among his representative works are *Clytemnestra*, *Helios and Rhodos*, *Phryne at Eleusis*, *Bizan*, *Cymon and Iphigenia*, *The Last Watch of Hero*, and *Elijah in the Wilderness*. See Ruskin's

Academy Notes, 1855 and 1875; Ruskin's *The Art of England* (1884); Bayliss's *Great Painters of the Victorian Era* (1902); Corkran's *Frederic Leighton* (1904); Mrs. A. Lang's *Sir F. Leighton* (1885); Rhys's *Frederick, Lord Leighton* (3rd ed. 1900); and an excellent article in Bryan's *Dict. of Painters* (vol. iii. 1904).

Leighton, ROBERT (1611-84), Scottish prelate, born, it is supposed, in London; was educated at Edinburgh and at Douay in France. Returning to Scotland, he was licensed to preach, and ordained to Newbattle (1641), being then an enthusiastic Presbyterian. From Newbattle he was translated to Edinburgh as principal of the university (1652). On the establishment of Episcopacy in Scotland he was offered and accepted the see of Dunblane (1661), from which he was transferred to Glasgow as occupant of the archiepiscopal throne (1669). Anxious for rest and seclusion, however, he was permitted to resign (1674). He spent the last ten years of his life in Sussex. Leighton published nothing during his lifetime, but several volumes of sermons and lectures, and his *Commentary on St. Peter*, were edited by Dr. Fall after his death. There are also later and fuller editions of his works by Doddridge (1748), Jerment (1808), Pearson (1825), Aikman (1831), and West (1869-75). See *Memoir* prefixed to Pearson's edition; Blair's *Selections from Leighton's Writings* (1883).

Leighton Buzzard (*Leighton Beaundersert* or *Bosard*), mrkt. tn. and par. in s.w. of Bedfordshire, on the Ousey and the Grand Junction Canal, 36 m. n.n.w. of London. There is some trade in timber, iron, and corn. Pop. urban dist. (1911) 6,784. See J. Stevenson's *Old Times in Leighton Buzzard* (1891).

Leiningen, a princely house of Germany, dating back to the 11th century, but after the peace of Luneyville (1801) its lands became absorbed in the territories of Baden, Bavaria, and Hesse.

Leinster, E. prov. of Ireland, extending from Dundalk Bay to Waterford Harbour. Other inlets are Dublin Bay, Wexford Harbour, and Ballyteige Bay. It comprises twelve counties—Louth, Meath, Dublin, Wicklow, and Wexford, on the coast; Kilkenny, Carlow, Kildare, Queen's, King's, Westmeath, and Longford, inland. Area, 7,619 sq. m. Pop. (1911) 1,160,328.

Leipa. See BÖHMISCH-LEIPA.

Leipzig. (1.) Circle, kingdom of Saxony, borders N. and N.W. on the Prussian prov. of Saxony, S.W. on the duchy of Saxe-Altenburg. The country is a fertile plain, with only a few mountain ridges in the S. and the E. Agriculture and the rearing of cattle flourish; there are also coal mines and granite and porphyry quarries. Area, 1,380 sq. m.; pop. (1910) 1,232,488. (2.) Town, cap. of the above, 95 m. s.s.w. of Berlin, is the seat of the Reichsgericht, the highest court of justice within the German empire. The famous university, founded in 1409, had (1910) 244 professors and teachers, and was attended by 4,592 students. Papermaking, furs, chemicals, printing, and bookbinding are among the industries. Leipzig is also an important manufacturing, commercial, and banking centre. A canal is projected between Leipzig and the river Saale, which would give the town a direct waterway to the sea. The first mention of the town, which is of Wendish origin, occurs in 1015 as Lipzi. It made rapid progress in the following centuries, but suffered severely during the Thirty Years', Seven Years', and Napoleonic wars. The most celebrated of

the battles of Leipzig was that between the French, under Napoleon, and the allied armies of Austrians, Russians, Prussians, and Swedes (Oct. 16-19, 1813), the result of which effectively shattered Napoleon's power. (See also BREITENFELD.) Pop. (1910) 585,743. See Hasse's *Die Stadt Leipzig* (1878), Grosse's *Geschichte der Stadt Leipzig* (1837-42), and Wuttke's *Die Völkerschlacht bei Leipzig* (1872).

Leisnig, tn., Saxony, 25 m. S.E. of Leipzig; manufactures machinery, shoes, and textiles. Pop. (1910) 7,994.

Leiston, or LEISTON CUM SIZEWELL, par. and vil., Suffolk, England, 22 m. N.E. of Ipswich; has extensive ironworks, and manufactures agricultural machinery and implements. Pop. (1911) 4,359.

Leith, important seapt., munici., and parl. bur., 2 m. N. of Edinburgh, on the southern shore of the Firth of Forth. It is joined to Edinburgh by a long street named Leith Walk. Its history is varied: it was twice seized and burned by the Earl of Hertford (1544 and 1547); besieged by the Protestants (1559-60); one of Cromwell's generals held the town in 1650; and the Jacobites seized Leith Fort, and burned the Custom House (1715). The harbour works are extensive, with a quayage of over four miles. Industries: engineering, shipbuilding, flour mills, sugar refineries, chemical works, and sawmills. The principal imports are grain, flour, sugar, chemicals, esparto, and timber. The exports include coal, iron, petroleum, whisky, and paper. In 1909 the imports amounted to £13,658,737, and the exports to £6,086,489. With Portobello and Musselburgh, Leith returns one member to Parliament. Pop. (1911) 80,489. See Campbell Irons's *Leith and its Antiquities* (1897).

Leitha, riv., Austria-Hungary, formed by the union of the Schwarza and Pittenau. It flows N.E. for 110 m. to join the Danube at Ungarisch-Altenburg.

Leitmeritz, tn. and episc. see of Bohemia, Austria, 36 m. N.N.W. of Prague, on the r. bk. of the Elbe. Industries: brewing, malting, brick-making, iron-founding, and printing. Pop. (1911) 15,421.

Leit-motif ('guiding theme'), in music, the term applied in some forms of composition to distinctive passages or phrases associated with certain prominent ideas, situations, or characters in the work.

Leitomischl, tn., Bohemia, Austria, 55 m. E.S.E. of Kolin; has a Piarist college and a castle. Pop. (1911) 7,795.

Leitrim, maritime co., prov. Connaught, Ireland, opening on Donegal Bay, and almost cut in two by Lough Allen. The N. part is generally mountainous, with fertile valleys. East of Lough Allen is another mountainous tract, with Slieve Anierin (1,922 ft.), the highest point in the county. The s. part is more open and well suited for cultivation. The Shannon enters the county N. of Lough Allen, and partly forms the s.w. boundary. Lakes are numerous. Agriculture is the chief industry; fodder crops, oats, and potatoes are cultivated. Coal is worked, and iron, lead, limestone, and marl occur. The county returns two members to Parliament. Area, 619 sq. m. Pop. (1911) 63,557.

Leixões, seapt., the lower port of Oporto, Portugal, 3 m. N. of mouth of river Douro.

Leland, CHARLES GODFREY (1824-1903), American author, born at Philadelphia; edited the *Continental Magazine* during the civil war, but from 1869 lived mostly in England. He published two important books on the English Gypsies (1875, 1882), but is

best known as the author of the diverting *Hans Breitmann's Ballads* (last ed. 1884), dialect poems in Pennsylvania Dutch-English. See his autobiographical *Memoirs* (1893), Pennell's *Life* (1905), and the *Atlantic Monthly* (1905).

Leland, JOHN (?1506-52), English antiquary, born in London; was appointed chaplain and 'king's antiquary' by Henry VIII. (1533), with power to search all cathedrals, abbeys, and colleges for records. He devoted six years to the task, arranging a wonderful collection, of priceless value to antiquarians. His papers are in the Bodleian and British Museums. Leland's *Itinerary* was first published at Oxford in 9 vols. (1710), and his *Collectanea* in 6 vols. (1715). See Huddesford's *Lives of Leland, Hearne, and Wood* (1772).

Leland Stanford University.
See PALO ALTO.

Leleges, ancient people who inhabited the isles of the Aegean Sea and the seaboard of Asia Minor from the river Meander to the borders of Lydia.

Lelewel, JOACHIM (1786-1861), Polish historian, of German descent, born and educated at Warsaw; was professor of history at Vilna from 1814 to 1824, when he was dismissed for taking part in secret insurrectionary movements. A prominent leader in the Polish revolution (1829), he was banished, and died in Paris. His monumental works on Polish history have been collected and published (1853-76).

Lely, SIR PETER (1618-80), properly Pieter van der Fars, Dutch-English portrait painter, born at Soest, in Westphalia, became pupil of De Grebber at Haarlem, and after the death of Van Dyck came to England (1641). He painted portraits of Charles I., with the Prince of Orange and the Princess Mary, and of Cromwell. After the restoration he was appointed painter to Charles II.

Many of his works are at Hampton Court and in the National Portrait Gallery. See Walpole's *Anecdotes of Painting in England*, edited by Wornum (1849), and Cunningham's *Lives of the Most Eminent British Painters* (1829-33).

Le Maire Strait, the channel which separates Staten I. from Tierra del Fuego, S. America; width about 20 m.

Lemaitre, ANTOINE LOUIS PROSPER, known as FRÉDÉRIC (1800-76), French actor, born at Havre; became famous when he created Robert Macaire in the melodrama *L'Auberge des Adrets* at the Ambigu, Paris (1823). From this date his career was an unbroken success. Among the plays which he marked with his original and powerful impress were *Trente Ans, ou la Vie d'un Joueur*, Dumas' *Kean, ou Désordre et Génie*, and Hugo's *Ruy Blas*. See *Souvenirs de Frédéric Lemaitre*, ed. by his son (1879), and Lecomte's *Frédéric Lemaitre* (1888).

Lemaitre, FRANÇOIS ELIE JULES (1853), French poet, critic, and dramatist, was born at Veneçy (Loiret), and came first before the public with two small volumes of verse, *Les Médallons* (1880) and *Petites Orientales* (1883), and *La Comédie après Molière* (1882). At this time he held a professorship at Grenoble, but resigned in 1884 to devote himself to literary and dramatic criticism. His literary essays have been reprinted from the *Revue Bleue* and other journals as *Les Contemporains* (1885-95); and his dramatic criticisms, which have for the most part appeared in the *Journal des Débats* as '*Impressions du Théâtre*' (1888-95). Of late years he has attempted drama. His plays are *La Révolte* (1889), *Le Député Leveau* (1890), *Mariage Blanc* (1891), *Flopote* (1893), *Les Rois* (founded on his novel of the

same name, 1895), *Le Pardon* (1895), *L'Age Difficile* (1893), *La Bonne Hélène* (1896), and *L'Ainée* (1898). In fiction he is represented by Sérénus (1886), *Dix Contes* (1890), *Les Rois* (1893), and *Myrrha* (1894). He has been a member of the French Academy since 1895. See *Life*, in French, by Sansot-Orland (1903).

Lemannus Lacus, anc. name of Lake of Geneva. See GENEVA (3.).

Le Mans. See MANS, LE.

Lemberg (Polish, *Lwów*), cap. of Austrian Galicia, and archiepiscopal see (Roman Catholic, Greek Catholic, and Armenian Churches), 355 m. E.N.E. of Vienna. The chief features of interest are the cathedrals, provincial house of assembly, university (founded in 1784; 4,824 students in 1911), Ossolinski National Institute, polytechnic (1873-7). Machinery, beer, textiles, leather, matches, and candles are manufactured. Pop. (1911) 206,574, including over 50,000 Jews.

Lemercier, JACQUES (?1585-1660), French architect, sculptor, and engraver, born at Pontoise; patronized by Cardinal Richelieu, and made architect to Louis XIII. (1618), in charge of the Louvre and the Tuilleries, Paris. His buildings are in a modified Italian Renaissance style, the chief ones being the Sorbonne (1629), the Pavillon de l'Horloge, and various churches. One of his greatest works in sculpture is his statuette of Henri IV. at St. Jean de Latran.

Lemgo, tn., Lippe, Germany, 6 m. N. by E. of Detmold; manufactures leather, cigars, woollen goods, and meerschaum pipes. It was one of the towns of the Hanseatic League. Pop. (1910) 9,966.

Lemming, a small rodent closely related to the vole, and belonging to the genus *Myodes*. In the Norwegian lemming (*M. lemmus*), an animal formerly distributed throughout much of Europe, the body reaches a length

of about five inches. The fur is yellowish-brown, marked with spots of dark brown and black; the animal is clumsily built, with short, rounded head, blunt muzzle, beady eyes, short tail and ears. The animals usually occur either in latitudes too high for conifers, or on the slopes of mountains beyond the pine-belt. But at very uncertain intervals the lemmings greatly increase in numbers, and in search of food a great body begins to migrate towards more fertile grounds. These armies of migrating lemmings are said to number millions of individuals, and the animals show a wonderful constancy both in the act of migration and in the general direction of the movement. They cross without hesitation any bodies of water which may block their path, and from the construction of the Scandinavian peninsula inevitably come in the long run to the sea, and the majority of those which have not perished from overcrowding, from disease, or from the attacks of their enemies, die beneath its waves. The lemming of N. Europe is replaced in N. America by the allied *M. obensis*; while the banded lemming (*Cuniculus torquatus*), which has no external ears and a rudimentary great toe, is circumpolar.

Lemniscate, a curve discovered by Bernoulli, which presents itself in many mathematical problems. It has the property that the product of the distances of a point on the curve from two fixed points is a certain constant. The curve consists of two equal loops, with a node at the origin.

Lemnos, or LIMNOS, one of the largest islands in the Aegean Sea, about midway between Mount Athos and the Hellespont. It is in the vilayet of Jezairi-Bahri-Sefid, European Turkey, and lies some 45 m. w. of the entrance to the Dardanelles. Area, 180 sq.

m. Produces grain, tobacco, and fruits. Chief port, Kastro or Lemnos, on the w. coast. Pop. 27,000 (mostly Greeks). In 1657 it passed into the hands of Turkey.

Le Molne, SIR JAMES MACPHERSON (1825), Canadian author, was born at Quebec. Writing with equal facility in French and English, he has produced numerous works on ornithology, archaeology, and Canadian history, including *L'Ornithologie du Canada* (1860); *Legendary Lore of the Lower St. Lawrence* (1862); *Quebec, Past and Present* (1876); *Birds of Quebec* (1891); *Histoire, Archéologie* (1882-90); *Legends of the St. Lawrence* (1898); and *The Annals of the Port of Quebec* (1901).

Lemon, the fruit of *Citrus limonum*, a tree or shrub belonging to the orange group. It is a native of India, but has been naturalized and is cultivated in many sub-tropical parts of the world. It is a much-branched, thorny bush, about twelve feet in height, bearing oval leaves and five-petalled flowers, followed by the well-known light yellow ovoid fruits. There are many varieties, among them the *C. javanica*, the *C. medica* (or Median lemon), the *C. margarita* (the pearl lemon), the *C. lumen* (the sweet lemon). The name is also given to the fruit of *Pasiflora maliformis* (the water lemon), and *Podophyllum peltatum* (the wild lemon). The lemon is much used both dietetically and in medicine.

Lemon, MARK (1809-70), English journalist, was born in London. He contributed to numerous journals, and was the author of several plays and novels, but is best known as one of the founders and first editor of *Punch*. From 1841 till his death his history is the history of *Punch*. See Hutton's *With a Show in the North* (1871).

Lemonade is properly a beverage prepared by extracting the juice of fresh-sliced lemons by means of hot water, and sweetening to taste; but it is more often a sweetened effervescent liquid flavoured with lime juice, citric or tartaric acid, or other substances.

Lemon Dab (*Pleuronectes microcephalus*), sometimes called lemon sole, belongs to the family of flat fishes. It is distinguished by having the eyes on the right side, the skin very smooth and slimy, and the upper surface of a rich brownish-yellow, mottled with darker and lighter spots. It is found from the Bay of Biscay to Iceland and the northern coasts of Europe, in moderately deep water, and lives mostly on sea-worms and small crustaceans. It spawns from April to the beginning of September, but chiefly in June, the female producing several hundred thousand pelagic (floating) eggs. It is caught almost entirely by trawlers. The value of the lemon dabs annually landed on the British coasts is about £140,000.

Lemon Grass, a name given from their agreeable smell, to several species of *Andropogon*, especially to *A. nardus* and *A. ciliatum*.

Le Moyne, CHARLES, SIEUR DE LONGUEUIL (1626-88), French pioneer in Canada, was a native of Normandy. He emigrated to Canada in 1641, lived for a time among the Huron Indians, and distinguished himself in the border warfare against the Iroquois and the English. He was ennobled by Louis XIV. (1668), and made captain of Montreal.

L'Empereur, a Canadian champagne wine which contains about 14 per cent. of alcohol. It is dry and sparkling.

Lemprière, JOHN (c. 1765-1824), English classical scholar, born in Jersey; was headmaster of the grammar schools at Abing-

don and Exeter, and subsequently held two Devonshire livings till his death. His *Classical Dictionary* was founded upon Sabatier's *Dictionnaire des Auteurs classiques*.

Lemur, or **GHOST**, a term first applied by Linnæus to certain members of the mammalian order Primates, because of their nocturnal habits and spectral appearance. The lemurs differ in many respects from the monkeys and apes, and constitute the sub-order Lemuroidea. They inhabit trees, and have a varied diet, including fruit, leaves, birds' eggs, small reptiles and birds, and insects.

The distribution of the lemurs is interesting. They are specially numerous in the island of Madagascar, and elsewhere occur only on the continent of Africa, and in India and parts of the Malay Archipelago. It was at one time the custom to explain this anomalous distribution by the hypothesis of a former continent (named Lemuria by W. L. Solan^r) stretching across the Indian Ocean from India to Africa via Madagascar. Such a hypothesis has been rendered unnecessary by the discovery of extinct emuroids; both in Europe and America, as owing to the animals were once widely distributed. Their abundance in Madagascar is explained by the fact that at that great island the large carnivores and the higher primates are alike absent.

As an example of a lemur, mention may be made of the ring-tailed lemur (*Lemur catta*), frequently seen in this country in confinement, a furry animal with a foxy face, and a long bushy tail banded with black and white. In its native habitat it is a gregarious animal, the members of the troop being at rest during the heat of the day, but becoming noisy and active at dusk. In *Lemur catta*, as in other forms,

the thumb and great toe are in each case opposable to the other digits, thus forming very efficient instruments in climbing. For other lemurs, see articles LORIS, AYE-AYE, and GALAGO.

Lemures, the name given by the Romans to the spirits of the dead; according to some authorities, it was the general name, the term *larre* being applied to the bad, and *manes* or *lares* to the good spirits. They were feared on account of their nocturnal wanderings, and to propitiate them a festival called Lemuralia or Lemuria was celebrated on May 9, 11, and 13. It probably ceased to be a state ceremony in early times, and its place taken by the Feralia on Feb. 21. See W. Warde Fowler's *Roman Festivals* (1908), and Gifford Lectures (1910).

Lena, great river of Siberia, with a drainage area of about 900,200 sq. m. With its farthest sources in the Onot range, E. of Lake Baikal, it reaches the sea, after a course of nearly 2,900 m., through a large delta (in which tusks of the mammoth have been found), and pours 350,000 cub. ft. of water into the ocean every second. Its most important tributaries are the Vitim (1,300 m. long), the Olekma (1,100 m.), and the Aldan (1,300 m.), on the r. bk., and the Vilyu (2,000 m.), on the l. bk.; the sands of the first two contain gold. The total length of navigable waterways is 7,110 m., of which 4,835 are utilized by steamers.

Lena, or **POLA DE LENA**, tn. Spain, in Asturias, prov. of and 15 m. s. of Oviedo. Pop. (comm.) 38,000.

Lenau, NIKOLAUS (1802-50), pseudonym of Nikolaus Niemisch von Strehlenau, Hungarian poet, born at Czataj. Of a deeply melancholic nature, Lenau visited America, and travelled in the West, searching there for a

peace he could not find in Europe. In 1833 he returned disappointed, settled at Vienna, and subsequently at Stuttgart, where he associated with the leading poets of the Swabian school. His poems are full of sentiment, of mysterious reverie, and of vague aspirations. They include his lyrics *Schießfieder*, and his epics *Faust* (1836), *Savonarola* (1837), and *Die Albigenser* (1842). See *Lives*, in German, by Schurz (1855) and Frankl (1885), and J. Reynaud's *N. Lenau, Poète Lyrique* (1905).

Lenbach, FRANZ (1836-1904), German portrait painter, born at Schrobenhausen, Upper Bavaria, studied at Munich under Piloty; paved the way in Germany for the realistic movement with his *Shepherd Boy* (1856), and his *Peasants taking Refuge from the Weather* (1858). He painted portraits of eminent European personalities, including Bismarck, Moltke, Gladstone, Wagner, and Heyse. His emphasis of the dominant traits of character and manner revealed so strikingly the personality of his sitter that he was called the *crocateur d'âmes*. See Rosenberg's *Lenbach* (4th ed. 1906) and *Franz von Lenbach, Gespräche und Erinnerungen*, ed. Wyl (1904).

Lencas. See CHONTALS.

Lenclos, ANNE or NINON DE (1616-1706), Parisian courtesan, celebrated for beauty, grace, and wit, as well as for intellectual culture, was born in Paris. Notwithstanding her numerous *liaisons*, she was admired and consulted by Molière, Fontenelle, Rochefoucauld, and Voltaire. See Capitaine's *Ninon de Lenclos* (1864).

Lenczyca (Lenchitsa), tn., Kalisz gov., Poland, W. Russia, 20 m. N. by W. of Lodz, cap. of dist., on the Ner (Oder basin). Pop. 9,000.

Lendinara, fort. tn., Italy, in Venetia, 26 m. s.s.w. of Padua; has silk industries. Pop. 7,500.

Leng, SIR JOHN (1828-1906), Scottish journalist and politician, was born and educated at Hull. In 1847 he became sub-editor of the *Hull Advertiser*, and in 1851 editor and proprietor of the *Dundee Advertiser*. He was also the proprietor of the *People's Journal* (1858) and the *People's Friend* (1869). He founded (1877) the *Evening Telegraph* (Dundee), a halfpenny daily, amalgamated with the *Evening Post* as the *Dundee Telegraph and Post* (1905). Sir John Leng was one of the members of Parliament for Dundee (1889-1906), and the author of *America* (1876), *Scottish Banking Reform* (1881), *American Competition with British Agriculture* (1881), *Home Rule All Round* (1890), *Nationalization, the Dream of the Labour Party* (1895), *Some European Rivers and Cities* (1897), and *Glimpses of Egypt and Sicily* (1902).

Lengenfeld, tn., Saxony, 26 m. s.w. of Chemnitz; manufactures textiles. Pop. (1910) 6,840.

Lenkoran, or LENCORAN, tn. in Transcaucasia, Baku gov., Russia, chief tn. of Lenkoran dep., on the Caspian Sea, at the mouth of the Lenkorani, 140 m. from Baku, and 20 m. from the Persian border. Pop. 9,000.

Lennep, tn., Rhenish Prussia, on the river Lennep, 8 m. s.e. of Elberfeld. Manufactures: machinery, woollens, cotton, and silk. Pop. (1910) 13,125.

Lennep, JACOB VAN (1802-68), Dutch poet and novelist, born at Amsterdam; studied law at Leyden, and while practising his profession at his native town published many poems and patriotic novels, *Nederlandische Legenden* and *De Pleegzoon* (1833), which won him the title of 'the Walter Scott of Holland.' Collected editions of his poetical works appeared (1859-72); dramatic works (1852-4); novels

(1855-72). See *Lives by Beeloo* and Jan ten Brink.

Lennox. The old district of Lennox was coextensive with the ancient sheriffdom of Dumbarton, Scotland, which included, in addition to the present shire, portions of Perth, Renfrew, and Stirling. The earldom of Lennox was bestowed by David I. on a Celt named Alwyn before 1193, and passed in 1473 to his descendant, Sir John Stewart, Lord Darnley (d. 1494). Matthew, fourth earl of the Stewart line (d. 1571), in his earlier years served with distinction in France. On behalf of Henry VIII. he made various abortive descents on the west of Scotland, and on this account was, by a parliament held at Stirling (October 1545), declared guilty of treason, and his estates forfeited. Recalled by Queen Mary to Scotland (1564), the forfeiture was rescinded; and Mary married his son, Lord Darnley. After the murder of Darnley he took a prominent part against the queen. On his death (1571) the title devolved on James VI., who granted it to Charles, younger brother of Lord Darnley (April 10, 1572). He died without male issue in 1576, when the earldom again devolved on James VI., who in 1579 bestowed it on Esmé, son of John Stuart, Lord of Aubigny in France, third son of the third earl. An emissary of Mary's Roman Catholic friends, Stuart speedily won the favour of the young king, who created him Duke of Lennox (1581); but after the Raid of Ruthven he was compelled to leave the country, and he died at Paris (1583). His son, Ludovic, second duke (d. 1624), who married a daughter of the Earl of Gowrie, was present at the Gowrie tragedy (1600), and was one of the main witnesses. After the accession of James to the English throne, he was (1613) created Earl of Rich-

mond, and (1623) Earl of Newcastle and Duke of Richmond in the English peerage. His line became extinct on the death of Charles, sixth Duke of Lennox and fourth of Richmond (1672)—the dukedom of Lennox, with all its possessions, devolving on Charles II., who in 1675 revived the title in the person of his illegitimate son, Charles Lennox (1672-1723), by Louise de Kerouaille, Duchess of Portsmouth. See Fraser's *The Lennox* (1874).

Lennox, CHARLOTTE, née RAMSAY (1720-1804), Anglo-American poet, critic, and writer, was born in New York, and came to England when fifteen. She published poems, novels, and plays, her best-remembered work being a novel entitled *The Female Quixote* (1752), of which Fielding entertained a high opinion.

Lennox, SIR WILBRAHAM OATES (1830-97), English soldier, served through the Crimean war, and in India during the mutiny. He organized the transport in the Nile campaign (1884), and was subsequently director-general of military education, on which subject he wrote numerous papers.

Lennox Hills, a range in Scotland extending N.E. from near Dumbarton to near Stirling. Included are the Campsie Fells, Strathblane Hills, Fintry Hills, and the Kilpatrick Hills. Highest point, Earl's Seat (1,894 ft.).

Lennoxtown, tn., Stirlingshire, Scotland, 11 m. N.E. of Glasgow; has bleachfields, calico-printing, and alum works, also coal mines. Pop. 2,700.

Leno, DAN (1861-1904), comedian, whose real name was George Galvin, the son of travelling 'entertainers,' made his first appearance on the stage at the age of three, his forte being posturing, singing, and dancing. After appearing in pantomime at the Surrey Theatre, in 1889 he was

engaged by Sir Augustus Harris for Drury Lane, where, till 1904, he was the mainstay of every pantomime. Leno possessed not only a rich fund of comedy in his own quaint face and person, but he had that far rarer gift, the intelligence to make use of it. See Wood's *Dan Leno* (1905).

Lenormant, FRANÇOIS (1837-83), French archaeologist, born and educated in Paris. He became sub-librarian at the Institut (1862), professor of archaeology at the Bibliothèque Nationale (1874), and superintended excavations in Greece and in the south of Italy. He discovered the non-Semitic or Akkadian element in the cuneiform inscriptions, and contributed a brilliant defence of the historical value of the early Scriptures in *Les Origines de l'Histoire d'après la Bible* (1880-82). He also wrote *Histoire des Peuples Orientaux et de l'Inde* (1869), and *Les Antiquités de la Troade* (1876).

Le Notre, ANDRÉ (1613-1700), French architect and landscape gardener. He was appointed by Louis XIV. to lay out the park of Versailles, the gardens of the Trianon, Chantilly, Fontainebleau, and St. Cloud, and the terrace at St. Germain. In Rome he laid out the gardens of the Vatican and the Quirinal, and in England St. James' and Kensington Gardens, and the park at Greenwich. See LANDSCAPE GARDENING.

Lens, tn., dep. Pas-de-Calais, France, on the Deule, 10 m. N.N.E. of Arras, in an important coal field. It has iron and steel works, and sugar and soap factories. Pop. 27,800.

Lenses are generally discs of glass with one or both of the faces curved, the simple magnifying glass or burning glass being perhaps the most familiar example. When such a lens is held so as to allow the sun's rays or

the rays from any other sufficiently distant source of light to pass through it, the rays become concentrated on the farther side of the lens very nearly to a definite point, known as the principal focus of the lens. A lens thus capable of condensing a beam of parallel rays to a definite focus is called a condensing, converging, or convex lens. It may be a plano-convex lens, with one face plane and the other convex; or a double-convex lens, with both surfaces convex; or a concavo-convex lens, in which the convex face has the greater curvature. The other type of lens is the diverging or concave lens, with its three varieties—plano-concave, double-concave, and convexo-concave. When parallel rays are passed through it they are made to diverge. They cannot, therefore, be brought to a focus on the farther side; but they appear to come from a point on the side next to the source of light, and this point is one of the principal foci of the lens. In both kinds of lenses there are obviously two principal foci, situated at equal distances from the lens on opposite sides of it.

The main properties of lenses may be easily deduced from a few simple experiments. Take, for example, several magnifying glasses of different strengths, place each in turn in the path of a ray of sunlight, and measure the distance from the lens of the position of the principal focus. It will be found that the stronger magnifying glass has the shortest focal length.

It remains to consider the formation of the image of an object in a lens. Let AB be a convex lens with its principal foci at F and F', and let Uu be a line representing the position of the object.

All rays diverging from a principal focus become parallel to the axis of the lens after they have

passed through it, and all rays originally parallel to the axis pass through the focus on the other side of the lens. Applying these principles, we find that the ray UF , falling on the lens at P , continues in a direction parallel to the line FF' . Also the ray Uo , drawn parallel to FF' , proceeds after refraction so as to pass through the other focus F' . Thus we have two rays from the same point u , which after refraction pursue courses meeting in the point v . This point v is therefore the image of the point u . In similar fashion we find the image v of the point u . In this

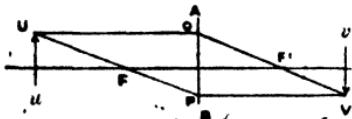


Diagram of Action of a Lens.

case the images are formed on the other side of the lens by rays really passing through the geometrical point of intersection. The image is then a real image, and may be projected upon a screen. If the object is *within* the focal distance, the rays of light do not really meet, but they seem to come from a point on the same side of the lens as the object point. The image is formed at a farther distance from the lens than the object is, and is magnified and in the same relative position as the object. See MICROSCOPE and TELESCOPE.

Lenses are of great practical importance in correcting defective eyesight. See EYE.

Special combinations of lenses are used in microscopes, telescopes, opera and field glasses, photographic cameras, and other optical instruments, the practical problem being in all such cases to get a clear-cut image free from colour fringes and not appreci-

ably distorted. See ACHROMATIC LENS.

Lent (A.S. *Lencten*, 'spring'), the great church fast of six weeks before Easter. Originally the duration of this fast appears to have been only forty hours. (See Birmingham's *Christian Antiquities*, bk. xi. 1.) Until the age of Gregory the Great, Lent consisted of only thirty-six days of fasting, since the Sundays were omitted, and all the Saturdays except one. It is not certain whether Gregory the Great, or Gregory II., nearly a hundred years after, added Ash Wednesday and the remainder of the week to Lent, which now, saving the Sundays, includes exactly forty days of abstinence. The fifth week in Lent is called Passion Week; the sixth week, commencing with Palm Sunday, is called Holy Week. Maundy Thursday is kept as commemorative of the institution of the eucharist. (See also GOOD FRIDAY.) Lent cannot be strictly accounted an apostolical institution, but it is of extreme antiquity. As a preparation for Easter its reason is very evident.

Lentibulariaceæ, a natural order of dicotyledonous plants, most of which are aquatic herbs, having entire radical leaves, or multipartite floating leaves with bladders. The corolla is two-lipped, and the fruit a many-seeded capsule. *Pinguicula* (butterworts) and *Utricularia* (bladderworts) are the two British genera.

Lentils, the seeds of a small leguminous plant, *Ervum lens*, of which numerous varieties are cultivated in the countries bordering the Mediterranean and elsewhere. The seeds are highly nitrogenous, and of great food value. They form the principal constituent of the well-known *Revalenta arabica* of commerce. They consist of—starch, 50 per cent.; casein, 24 per cent.; fat,

2 per cent.; and water, 14 per cent.

Lentini (anc. *Leontini*), tn., east coast of Sicily, 1½ m. s.e. of the lake of the same name, 22 m. N.W. of Syracuse. It was founded by colonists from Naxos in 730 B.C. Manufactures earthenware, and is a market for wine, grain, and cattle. Pop. 17,000.

Lentulus, a patrician family of the Cornelian clan, in ancient Rome, of which the best-known member was Publius Cornelius Lentulus Sura, who was quæstor under Sulla (81 B.C.), prætor (75), and consul (71). He was ejected from the senate (70) for his disgraceful life, and joined the conspiracy of Catiline. When Catiline left Rome (63), Lentulus was head of the conspirators, but was eventually arrested and executed by Cicero. See Sallust's *Catilina* and Cicero's *Second Philippic*.

Lenvik, tn., Norway, dist. of and 25 m. s.w. of Tromsö. Pop. 4,800.

Lenz, JAKOB MICHAEL REINHOLD (1751-92), German poet, formed for a short time one of Goethe's circle at Strassburg and Weimar, but owing to his extremely unconventional behaviour was forced to leave Weimar, and led a wandering life until his death at Moscow. He was a typical poet of the 'storm-and-stress' period. *Die Liebe auf dem Lände*, addressed to Frederica Brion, stands high among his poems, many of which are dramatic in form. See Stöber's *Der Dichter Lenz und Friederike von Senenheim* (1842), and Froitzheim's *Lenz und Goethe* (1891).

Lenz's Law. See ELECTRICITY, CURRENT.

Leo, an ancient constellation, and the fifth sign of the Zodiac, to which is affixed the symbol \textcircled{L} . The sun enters it about July 21. The stars in the neck and mane of the asterism form the well-

known 'sickle,' the handle being marked by Regulus. Denebola (β Leonis) is a Syrian star of 2·2 magnitude; Algieba (γ Leonis) is a fine double, composed of 2·6 and 3·8 magnitude solar stars in relative motion, the character of which is not yet determined. The periods of the binaries α and ω are 180 and 116 years respectively; that of δ is very great, and cannot at present be estimated with accuracy; ϵ is a spectroscopic binary with a period of 14½ days. R Leonis, a red star with a bandied spectrum, varies from 4·6 to 10·5 magnitude in a period of 313 days. On a line from α to β are found many nebulae, the brightest being 65, 66, 95, and 96 Messier.

Leo, the name of thirteen popes, of whom the most important were:—**LEO I.**, St., surnamed the Great (410-461), who was born at Rome, and succeeded Sixtus III. With Leo's pontificate began the promulgation of papal letters and decrees. Leo I. merits praise for having induced Attila to spare Rome during his invasion of Italy. See Saint-Cheron's *Histoire du Pontificat de Saint Léon* (1846).—**LEO III.** (795-816) crowned Charlemagne in Rome, and in return was established as temporal sovereign over the Roman states, subject to the suzerainty of the emperor.—**LEO IX.** (1048-54) was a native of Alsace, of the name of Bruno, and a relative of the Emperor Conrad II. His first Easter synod enjoined the celibacy of the clergy, and throughout his pontificate he strongly denounced simony and incontinence.—**LEO X.**, Cardinal Giovanni de' Medici (1475-1521), born at Florence, the second son of Lorenzo the Magnificent, was elected Pope at thirty-six (1513). Cardinal de' Medici, before his accession to the papal chair, showed that he inherited the diplomatic skill of his father.

On ascending the chair of St. Peter (1513) he showed himself, during the seven years of his occupancy, a munificent pontiff, if a vacillating and fickle politician. Leo X. made Rome the centre of the world in art and scholarship as well as in religion. See MEDICI; also Roscoe's *Life and Pontificate of Leo X.* (1806), and Audin's *Histoire de Léon X.* (1886).—LEO XIII. (1810–1903), son of Count Pecci and 258th Roman pontiff, was born at Carpineto. After taking orders, he became apostolic delegate in succession at Benevento, Perugia, and Spoleto; archbishop of Perugia (1846); cardinal (1853); Cardinal Camerlengo (1857); and finally, on the death of Pius IX. (1877), Pope (1878). He showed himself a pontiff of enlightened views, while his foreign policy was characterized by foresight and moderation. He restored the hierarchy to Scotland, and settled the religious difficulty with Germany. A man of wide culture, he wrote Latin verse of a high order; while in his encyclicals he strongly upheld the supreme power and influence of the papacy. See *Lives* by Hartier (1892), Norbert (1894), McCarthy (1896), and Des Houx (1900).

Leo I., FLAVIUS (400–474), Byzantine emperor, native of Thrace, was the first emperor of Constantinople crowned by a bishop. He defeated the Huns in Dacia, but while on an expedition to reconquer Africa his fleet was destroyed by the Vandals off the coast of Carthage.

Leo III. (c. 680–741), called 'the Isaurian,' emperor of Constantinople. He obtained a great victory over the Saracens, who had besieged Constantinople for two years (718–719). Leo is best remembered by his strife against the iconoclasts or image-breakers. In 734 he transferred Greece, Macedonia, and Illyria to the

patriarchate of Constantinople, thus initiating the separation between the Greek and Roman churches. See Gibbon's *Decline and Fall*.

Leo, LEONARDO (c. 1694–1746), Italian composer, studied at Naples and Rome, returning in 1717 to the former city to become choirmaster and director of the musical school of San Onofrio. Among his works are the oratorios *Santa Elena* and *La Morte d'Abel*, and the operas *Sofonisbe*, *Olimpiade*, *La Clemenza di Tito*, and *Achille in Sciro*; while his sacred music includes his celebrated *Misere*.

Leo Africanus, Berber traveller and geographer, who, towards the end of the 15th century, travelled through W. Asia and N. and Central Africa. While returning by sea from Egypt he was seized by pirates and sent to Rome, where he became a Christian. His account of his travels, written in Italian and published by Ramusio (1550), was for long the chief source of information on the Sudan.

Leoben, tn., prov. Styria, Austria, 27 m. N.N.W. of Graz, with a mining academy. There are lignite mines and iron works in the vicinity. Pop. (1911) 11,504.

Leobschütz, tn. in Silesia, Prussia, on the Zinna, 20 m. N.N.W. of Ratibor. Manufactures woollen goods, glass, and machinery. Pop. (1910) 13,083.

Leochares (fl. 352–338 B.C.), famous Greek sculptor of the later classic school, and a contemporary of Scopas and Praxiteles. A copy of his masterpiece, *Ganymede carried off by the Eagle of Zeus*, is in the Vatican at Rome. See Murray's *Hist. of Greek Sculpture* (1890), and Gardner's *Handbook of Greek Sculpture* (1896).

Leo Minor, a small constellation between Leo and Ursa

Major, formed by Hevelius (1690). The chief star, 46 Leonis Minoris, is of the fourth magnitude. The constellation contains many nebulæ.

Leominster (anc. *Leofminstre*). (1.) Municipal bor., Herefordshire, England, 12 m. N. of Hereford. The history of the town begins in 658, when a convent was established by Merewald, king of Mercia. Implement works, and trade in cider and hops, are the chief industries. Pop. (1911) 5,737. See Townsend's *Leominster*. (2.) Town in Worcester co., Massachusetts, U.S.A., 40 m. W.N.W. of Boston. Manufactures paper, woollen goods, pianos, combs, and furniture. Pop. (1910) 17,580.

Leon. (1.) Province in N.W. of Spain, intersected by the Douro and the Minho. It is mountainous in the N. and w., and covers an area of 5,936 sq. m. Agriculture is important, wheat, rye, oats, barley, and maize being largely cultivated. Cattle, mules, coal, iron, and leather are among the chief exports. Pop. (1910) 394,119. The kingdom of Leon was founded in 915, when Garcia, son of Alfonso III., became king. It suffered much from Moorish attacks and from internal feuds until the vigorous reign of Alfonso V. From 1037 to 1157 it formed part of Castile. After the latter date there was bitter strife between Leon and Castile till 1230, when Ferdinand III. permanently united his father Alfonso IX.'s kingdom of Leon with his mother Berengaria's kingdom of Castile. (2.) Capital of above prov., 180 m. N.N.W. of Madrid, lies on a fertile plain between the Bernesga and the Tatio. Pop. 17,000. (3.) Largest town of Nicaragua, Central America, and formerly cap. of the state, 50 m. N.W. of Managua; stands on a fine plain near the Pacific coast, and is surrounded by plantations.

Pop. 63,000. It is the cap. of the dep. of Leon. The dep. is bounded on the S.W. by the Pacific, and on the S. and E. by Lake Managua. (4.) Town, Mexico, state of and 30 m. W.N.W. of Guanajuato. Copper and silver are worked in the neighbourhood, and leather is manufactured. Alt. 5,865 ft. Pop. 65,000.

Leon, FRAY LUIS DE. See PONCE DE LEON.

Leonardo da Vinci (1452-1519), Italian painter, head of the Umbrian Lombard School, one of the most remarkable and many-sided intellects of the middle ages, appropriately named 'the Faust of the renaissance.' He was painter, sculptor, architect, musician, poet, engineer, mathematician, and philosopher, as well as the great rival of Michael Angelo. The illegitimate son of a peasant woman and a Florentine notary, he was educated in Florence, where he studied painting under Verrocchio. His unfinished *Adoration of the Kings* and his *Medusa's Head* belong to his Florentine period; and to his Milanese period are ascribed his most celebrated productions, the two versions of *Our Lady of the Rocks* (Louvre, Paris, and National Gallery), and *The Last Supper* (Milan). He also founded an academy of arts, for which he wrote *Notes for a Treatise on Painting*. Owing to the French occupation of Milan (1499) Leonardo returned to Florence, and was commissioned, with Michael Angelo, to decorate the council hall of the Signoria—paintings subsequently destroyed. The famous *Mona Lisa*, in the Louvre, was painted in 1504. For ten years (1506-16) he spent his time between Florence, Rome, and Milan; also painted his *St. Anne* and *St. John the Baptist*, now in the Louvre. Thereafter he accompanied Francis I. to France, and died three years later in the

Château de Cloux, Amboise. A man of extraordinary physical beauty and of physical strength, his endless invention, his curiosity in science, and his ceaseless quest after the ideal and the marvellous, are reasons for the small number of pictures finished by him. Of these, the *Last Supper* is practically destroyed through his experimentation with oil methods. But he created a symbolical type of ideal female beauty, subtle, enigmatic, with the mysterious smile that has haunted and perplexed his students of succeeding generations. Da Vinci's influence through his numerous important pupils has been potent; and many of his great works can be studied in the Uffizi, in Turin, in the Ambrosiana at Milan, in the Louvre, in S. Kensington Museum, and in the royal collection at Windsor. See Brown's *The Life of Leonardo da Vinci* (1828), Rio's *Leonard de Vinci et son Ecole* (1855), Heaton and Black's *Leonardo da Vinci and his Works* (1873), Houssaye's *Histoire de Leonardo de Vinci* (1876), Richter's *Literary Works of Leonardo da Vinci* (1883), Seailles's *Leonard de Vinci l'Artiste et le Savant* (1892), and McCurdy's *Leonardo da Vinci's Notebooks Rendered into English* (1906).

Leoncavallo, RUGGIERO (1858), Italian musical composer, born at Naples; made his reputation by the one-act opera *I Pagliacci* (1892). He has since then composed the operas *I Medici* (1893), *Chatterton* (1896), *La Bohème* (1897), and *Der Roland von Berlin* (1904).

Leonesse, comm., Italy, in Abruzzi e Molise, prov. of and 26 m. N.W. of Aquila. Pop. 8,000.

Leонфорте, tn., Catania prov., Sicily, Italy, 38 m. w. by N. of Catania; trades in sulphur, cattle, wine, and oil. From the town N.W. through the mountains to

Termini Imerese is a highway, 63 m. long, the mediæval route of raiding Arabs from Palermo into the interior. Pop. 16,000.

Leoni, LEONE (1509-90), Italian sculptor, goldsmith, and medalist, was born at Arezzo. Through the influence of Ferrante Gonzaga he entered the service of the Emperor Charles V., and remained attached to the imperial household during the remainder of his life. Statues of Charles V. and the queen of Hungary are at Madrid, and other examples of his work are in the Museo del Prado, Madrid, in the Louvre, and at Vienna. See Plon's *Leone Lconi, Sculpteur* (1886).

Leonidas, in ancient Greek history, the famous Spartan who commanded and died at Thermopylae. He was king at Sparta (491-480 B.C.), in which latter year he went to hold the pass of Thermopylae against the forces of Xerxes, with only 300 Spartans and 5,000 allies. For two days Leonidas and his soldiers held the pass against the flower of the Persian army; but the next night a traitor showed the Persians a path over the mountains, which enabled them to take the Greeks in the rear.

Leonid Meteors, a swarm of minute bodies revolving round the sun in 33½ years, and crossing the earth's orbit at the point traversed by it about November 15. Hence arises a periodical shower of falling stars, called Leonids, because they appear to diverge from a small sky area near 'Leonis'. The position of the 'radiant' indicates the trend of their parallel tracks, and is merely their perspective vanishing point. The Leonids are characterized by their swiftness, their greenish tint, and their persistent trains. Being retrograde travellers, they meet us with a velocity of forty-four miles a second. The first authentic notice of a Leonid dis-

play was in 902, brilliant recurrences being observed in 1202 and 1366, in 1799 by Humboldt at Cumana, and universally on Nov. 12, 1833. The periodicity of the phenomenon was then recognized, and the prediction of its conspicuous visibility on Nov. 13, 1866, obtained full verification. Its retardation by about three days in each century depends upon the progression of the node resulting from perturbative planetary action. Planetary disturbance, too, doubtless occasioned the failure of the expected meteors on Nov. 15, 1899; for the main body of Leonids, having swerved aside, may never again encounter the earth. These meteors follow in the wake of Tempel's comet of 1866, and, according to Leverrier, were possibly introduced with it into the solar system through the influence of Uranus, 126 A.D., when comet and meteors presumably formed one compact mass. At present Leonid stragglers are dispersed round the entire orbit, and the denser portion of the swarm is distributed over a section of it measured by hundreds of millions of miles.

Leonine Verse, a popular mediæval form of Latin verse, in which the syllables immediately preceding the cœsura of a line rhyme with the final syllables—e.g.:

'En rex Eduardus, debacchans ut leopardus.'

The origin of the term is attributed to Leoninus, canon of St. Victor's, Paris (circa 1150), as also to Pope Leo II. For an account of rhyme in classical Latin, see Munro's *Lucretius*, preface to notes. It has never been a popular measure in English poetry, although Tennyson in his earlier work practised this somewhat difficult metre with success—as: 'Low-flowing breezes are roaming,
The broad valley dimm'd in the
gleaming.'

Leonnatus, a Macedonian of Pella, and one of the principal officers of Alexander the Great, having previously served as one of the bodyguards of Philip. In 327 he helped Peucestes to save Alexander's life in battle. For this and for other services Alexander presented him with a golden crown at Susa in 325 B.C. After Alexander's death he was made satrap of Lower Phrygia. He fell in battle while attempting the relief of Antipater, who was blockaded at Lamia in Thessaly by the revolted Greeks.

Leonotis, a genus of shrubs and herba belonging to the order Labiate, family Ballotidae, natives of tropical or subtropical regions. They are characterized by dentate leaves and by showy red or yellow sessile flowers. The most valuable species is *L. Leonurus*, or lion's tail, a hairy shrub from S. Africa, with whorls of long scarlet flowers in winter. Another good species is *L. nepetifolia*.

Leon Pinelo, ANTONIO DE (c. 1590-1675), Spanish lawyer and author, born at Cordoba, Argentina. Leon Pinelo was judge of the tribunal of the Casa de Contratacion at Seville, and was appointed royal historiographer (1637). His most important works are the colonial code, *Recopilación general de las Leyes de las Indias* (finished in 1635, made authoritative by royal command in 1680), and *Biblioteca Oriental y Occidental, náutica y geográfica* (1629), the first bibliography of the Spanish colonies.

Leontini, the ancient name of Lentini (q.v.)

Leontodon, a genus of composite-flowering plants with dentately-lobed leaves, the lobes pointing backward, an involucre imbricated with scales, a flattened fruit with a long beak, and a hairy white pappus. The flowers are all strap-shaped, and the flower-stalk

is hollow and smooth, with a single flower-head on its summit. The leaves are radical. The common dandelion, *L. taraxacum*, is a member of this genus.

Leontopodium, or LION'S FOOT, a genus of herbaceous plants belonging to the order Composite. They bear dense cymes of flowers at the summits of the branches, and all are hairy or woolly plants. The most interesting species is *L. alpinum*, the edelweiss.

Leopard (*Felis pardus*), a carnivore closely allied to the lion and the tiger, but differing in its inferior size, and in the fact that its tawny coat is covered with dark spots, formed by an incomplete ring of black enclosing a bright central patch. In addition to this brightly-coloured form, there exists also the black leopard or panther, formerly regarded as a distinct species, but now proved to be merely a variety. Leopards occur throughout India, Ceylon, and Burma, in Persia, Palestine, Syria, Arabia, and Africa; while formerly their distribution was even more extensive. They are very active animals, and differ from lions and tigers in that they habitually climb trees. The total length, including the tail, is sometimes as much as eight feet.

Leopardi, COUNT GIACOMO (1798-1837), Italian writer, born at Recanati, of a noble but impoverished family; was a cripple through life. He devoted his youth to so close a study of the classics that he became one of the most brilliant scholars of the day, while all his earlier work is thoroughly imbued with a classical sense of form. Unhappy at home, he left it in 1822, and led a wretched and penurious life at Rome, Milan, Bologna, Florence, and Pisa. Later he found a refuge in the house of Antonio Ranieri at Naples, where he died. Leopardi's pessimism is justified

by his physical sufferings and by the circumstances of his life. The poems of his first period (1819-26), consisting of the *Idilli* and the first ten *canzoni*, are freer in their style, though still bound by classical form. The *canti* of the second period (1826-36) represent the struggle between the poet's pessimism and his lost ideals. In the *Paralipomeni della Batracomiomachia* he satirizes the political and other aspirations of contemporary Italy. His prose is no less admirable than his verse. The *Epistolario*, in which Leopardi reveals his innermost self, is a most valuable and touching human document. Ranieri collected Leopardi's works in six volumes (1845-9), and afterwards published his *Sette anni di sodalizio con G. Leopardi* (1880). The best editions of the poems are those of Chiarini (1886) and Mestica (1886); while Straccali wrote a good commentary on them (2nd ed. 1895). The prose works have been well edited by Mestica (1890, 1899) and by Carducci (1898-1900). The best edition of the *Epistolario* is the fifth, edited by Piergili (1892). See the biographies by Montanari (1838), Giotti (1862), Bouché-Leclercq (1874), Rosa (1880), Annovi (1898), and Cesareo (1902). Leopardi's poems were translated into English by Cliffe (1893, 1903), Morrison (1900), and Sir T. Martin (1904); his prose works by Edwards (1882), Patrick Maxwell (new ed. 1905), and by the poet James Thomson (1893; new ed. 1905). See T. Leopardi's *Notes Biographiques sur Leopardi et sa Famille* (1881); De Sanctis's *Studio su G. Leopardi* (new ed. 1905); Cesareo's *La Vita di G. Leopardi* (1902); and Chiarini's *La Vita di G. Leopardi* (1905).

Leopold, LAKE. See RIKWA, LAKE.

Leopold II., lake in administrative district of the same name,

Belgian Congo, crossed by $18^{\circ} 17'$ E. long. and 2° S. lat. Length, 80 m.; average width, 10 to 15 m.

Leopold I. (1640-1705), Holy Roman emperor, son of Ferdinand III., became king of Hungary (1655), and king of Bohemia (1657). Elected emperor (1658), he made war with the Turks, whose defeat at St. Gotthard (1664) led to the peace of Temeswar. His persecution of the Protestants of Hungary caused an insurrection, which he suppressed with the aid of John Sobieski, king of Poland (1683). In 1701 Leopold claimed the crown of Spain for his son Charles, and thus initiated the war of the Spanish Succession. See Baumstark's *Kaiser Leopold I.* (1873).

Leopold II. (1747-92), Holy Roman emperor, third son of Francis I. and Maria Theresa, became grand-duke of Tuscany (1765), and succeeded his brother, Joseph II., as emperor (1790). In 1792 he concluded an alliance with Prussia for the restoration of Louis XVI. of France, but died just as hostilities were about to begin.

Leopold I., GEORGE CHRISTIAN FREDERIC (1790-1865), king of the Belgians, son of Francis, Duke of Saxe-Coburg. At an early age Prince Leopold took service with Russia, and in 1813 fought against Napoleon at Lützen, Bautzen, and Leipzig, and entered Paris with the allied sovereigns. Prince Leopold visited England in 1815, and the following year married the Princess Charlotte, daughter of George IV.; was naturalized, and created Duke of Kendal and made a general in the British army. Prince Leopold was offered but declined the crown of Greece in May 1830. In the same year Belgium revolted from the Netherlands, and in 1831 Prince Leopold was elected first king of the Belgians. On

Aug. 9, 1832, he married Louise, eldest daughter of Louis Philippe. King Leopold received the title of "Juge de Paix de l'Europe" by reason of his frequent good offices in international disputes.

Leopold II., LOUIS PHILIPPE MARIE VICTOR (1833-1909), king of the Belgians, was born at Brussels, and succeeded his father, Leopold I., on December 10, 1865. King Leopold was proclaimed sovereign of the Congo Free State (1885). The Free State is the successor to the Congo International Association, which was founded in 1883 by King Leopold. King Leopold married, on Aug. 22, 1853, the Archduchess Marie Henriette Anne of Austria, and by her had four children—the Duke of Brabant (d. in 1869 at the age of ten), Princess Louise (m. 1875, to Prince Philip of Saxe-Coburg-Gotha; the marriage was dissolved Jan. 15, 1906), Princess Stephanie (m. first, 1881, to Archduke Rudolf of Austria, who died in 1889, and second, 1900, to Count Lonyay), and Princess Clementine (b. July 30, 1872). The queen of the Belgians died on Sept. 19, 1902. In 1907 Belgium assumed the administration of the Congo Free State. See Morel's *King Leopold II.: his Rule in Belgium and the Congo* (1905).

Leopold, KARL GUSTAF (1756-1829), Swedish poet, born at Stockholm. In 1786 he was called to assist Gustavus III. with his dramatic works, and ultimately became the king's private secretary (1788) and an academician. His tragedies, *Odin* and *Virginia*, seem turgid enough now, but they were the admiration of his contemporaries. Much more pleasing are his poems. See his *Poetiska Skrifter* (1873).

Leopoldina Railway was registered as an English company in December 1897, being formed to take over several Brazilian railways and work them as one

English undertaking. The mileage at the end of 1910 was 1,580 m. The income for the year 1910 was £1,318,116, and the working expenses £854,286, the ratio being 64·91 per cent. The capital issued is £12,555,140. Gauge of railway, 1 metre.

Leopoldshall, tn., Germany, in Anhalt, adjoining the Prussian tn. of Strassfurt; has salt works. Pop. (1910) 6,588.

Leopoldville, trading station (founded by Stanley in 1882) in the Belgian Congo, W. Africa, on l. bk. of the Congo, at the entrance to Stanley Pool. Beyond it the river is open for navigation for 1,000 m. There is a government organized transport service of thirty-six steamers for the Upper Congo trade. Seaward the river's course is beset with cataracts, and a railway (250 m.) has been constructed between Matadi and Leopoldville. Pop. about 5,000.

Leosthenes, an Athenian who commanded the confederate Greeks in the Lamian war (322 B.C.), and fell in battle before Lamia while besieging Antipater.

Leotychides, king of Sparta, reigned from 491 to 469 B.C. He commanded the Greek fleet against the Persians, and won the battle of Mycale (479).

Leovigild, LÖWENHELD, (d. 586), king of the Visigoths in Spain from 569. In his reign the Vandals and Byzantines who occupied Andalusia were subdued. Arianism was maintained by Leovigild. The heresy was vanquished, and Spain was reunited to the Roman Church under Gregory the Great in 590 A.D. See Bradley's *Story of the Goths* (1888).

Lepage. See BASTIEN-LEPAGE.

Lepanthes, a genus of tropical epiphytal orchids, of which the W. Indian *L. sanguinea*, with red flowers, and the New Granada *L. calodictyon*, with small orange

and red flowers, are the best-known species.

Lepanto, officially NAUPAKTOS, seapt. of Greece, on the N. shore of the entrance to the Gulf of Lepanto, 12 m. N.E. of Patras. Pop. 7,000. The STRAIT OF LEPORTO, 1 m. wide, is the entrance to the Gulf of Corinth, and is defended by a castle on either side. Here, on Oct. 7, 1571, Don John of Austria, commanding the allied fleet of Austria, the Italian states, and Spain, encountered a powerful Turkish fleet under Ali Pasha, which he completely defeated, thereby releasing about 15,000 Christian galley slaves. For the Gulf, see CORINTH (2).

Lepchas, people of Tibetan stock inhabiting Sikkim, Bhutan, and part of E. Tibet, and consisting of two branches, which they designate Róng and Khamba. Their religion is Lamaism. See Von Schlagintweit's *Results of a Scientific Mission to India and High Asia* (1863); Rowley's *Wild Tribes of India* (1882); Donaldson's *In Lepcha Land* (1900).

Lepidodendron is the generic name of a large and important group of plants which flourished principally in the Carboniferous period. The outer surface of the bark is marked by lozenge-shaped, scale-like markings, the leaf-cushions. These are arranged in dense spirals, which wind around the stems. Often the narrow and pointed leaves are found still adherent; they may also carry cones (*lepidostrobi*), which in form somewhat resemble those of the fir. The branches usually fork repeatedly, and were implanted on a massive stem which had a similar external sculpture. Some of these stems have been seen in the roofs of coal-workings with a length of a hundred feet. Their roots are generally known as *stigmaria*. The Lepidodendra belonged to

the Lycopodiaceæ, and have their nearest representatives in the diminutive club-mosses, which they resemble even in their superficial characters. See Solms-Laubach's *Fossil Botany* (1891).

Lepidoptera (*lepis*, 'scale'; *pteron*, 'wing'), an order of insects which includes the butterflies and moths, and is marked by the following characteristics:—There are four pairs of wings, and both they and the body are covered with scales, frequently bright-coloured, which on the body may resemble hairs in appearance. The imago, or perfect insect, is devoid of biting jaws, and usually possesses a long protrusible proboscis. The metamorphosis is well marked, and the larva (caterpillar) has powerful jaws, and is almost invariably vegetarian in diet. In the pupa stage the appendages are usually cemented to the body, which is invested by a continuous horny skin, and frequently by a cocoon in addition. See BUTTERFLIES, MOTHS, CATERPILLAR, and INSECTS.

Lepidosiren, one of the three living genera of Dipnoi. See DIPNOI.

Lepidosteus. See GAR-PIKE.

Lepidus, the name of a distinguished family of the Æmilian clan in ancient Rome, of patrician rank. Its most famous members were:—(1.) MARCUS ÆMILIUS LEPIDUS, who was praetor in Sicily (81 B.C.), and consul (78 B.C.), as representing the popular faction, with Catulus as a colleague. Subsequently the senate ordered Lepidus to retire to his province of Further Gaul; but he remained in Etruria, collected an army, and marched on Rome. He was defeated in the Campus Martius by Pompey and Catulus. (2.) MARCUS ÆMILIUS LEPIDUS, one of the triumvirs with Augustus and Antony, a son of the above, was

praetor (49 B.C.), and took Cæsar's side against Pompey. He was consul (46 B.C.), and was governor of Gallia Narbonensis and Hispania Citerior (44 B.C.). At the time of Cæsar's death he was near Rome, and aided Antony, afterwards becoming *pontifex maximus*. In 43 B.C., Antony, after his defeat at Mutina, took refuge with Lepidus, when they together crossed the Alps at the head of a strong army, and were joined by Octavian (Augustus), whom the senate expected to oppose them. In October of that year they formed the second triumvirate. After the battle of Philippi (42 B.C.) he received the government of Africa, and remained there until 36 B.C., when Octavian called him to Sicily to help in the war against Sextus Pompeius. Lepidus came, but tried to secure Sicily for himself. Octavian easily subdued him, and deprived him of his triumvirate, his army, and his province, but allowed him to retain the pontificate, and to live in retirement at Circeii, where he died (13 B.C.).

Le Play, PIERRE GUILLAUME FRÉDÉRIC (1806–82), French economist, was born at La Rivière Saint Sauveur in the Calvados. Napoleon III. appointed him to organize the exhibition of 1855; he was also prominently connected with the London Exhibition of 1862, and the Paris Exhibition of 1867. In 1881 he commenced the publication of *La Réforme Sociale*, a fortnightly journal. He published *La Réforme Sociale en France* (1864), *L'Organisation du Travail* (1870; Eng. trans. 1872), and *La Constitution Essentielle de l'Humanité* (1881). See Aubertin's *F. Le Play* (1892).

Lepontine Alps, the name of that portion of the main chain of the Alps included between the Simplon Pass on the W. and the

Splügen Pass on the E. In the E. half (Adula Alps) are included all the various sources of the Rhine: the hills round the Italian lakes form part of this range. See Conway and Coolidge's *Climbers' Guide to the Lepontine Alps* (1892), and *Guide to the Adula Alps* (1893).

Leportel, seapt., France, in Pas de Calais dep., 2 m. s.s.w. of Boulogne. Here is the marine laboratory of Lille University. Pop. 6,400.

Leprosy is a disease caused by the bacillus lepræ, and characterized by nodules or tubercles on the skin, or by anesthetic changes in the nerves. Leprosy is very widely spread, and at one time was common in Europe, but it has now died out there except in Norway and Turkey. By some authorities it is believed to be communicated by contagion; while others favour the view that a fish diet has some influence in creating a susceptibility to the disease. Clinically two forms of leprosy are recognized—(1) the tubercular, and (2) the anesthetic. In the former, the tubercles are composed of masses of cells which vary in size and are embedded in connective tissue. Around and in the cells are great numbers of the bacilli lepræ. The skin becomes covered with the outgrowths, and is subject to ulceration between them. Considerable deformity is produced by the tubercles and by the cicatrization of the ulcerated areas; while if the ulceration is deep, there may be extensive destruction of tissue and the loss of fingers or of toes. In some forms the affected area becomes perfectly white. The hair generally disappears, and sooner or later the mucous membranes become involved, so that the nodules are present in the mouth or larynx. In the latter case they may cause cedema, and lead to a rapidly fatal result. Blindness is a fre-

quent concomitant of leprosy. When the purely anesthetic form of leprosy exists, the disease has little resemblance to the other variety. It usually manifests itself first by pains in the limbs, which are soon succeeded by numbness or by absolute loss of sensation. The nutrition of the tissues suffers severely, and is shown by the formation of bullæ and spots, which later may break down into deep necrotic ulcers. The course of this form of the disease is very slow. No remedy is known for leprosy, although in 1906 Dr. Desprez and others in Paris obtained most encouraging results by the use of chaulmoogra oil. Isolation, cleanliness, and measures of sanitation are of use as prophylactics. The celebrated leper settlement at Molokai in the Pacific is described by R. L. Stevenson in his *Father Damien* (1890).

Lepsius, KARL RICHARD (1810-84), German Egyptologist and archæologist, was born at Naumburg. His first book, *Die Palæographie als Mittel der Sprachforschung*, written in Paris (1834), and published in Berlin, obtained the Volney prize of the French Institute. His *Lettre à M. Roselli sur l'Alphabet Hiéroglyphique* was written in Rome (1837), where he also studied the ancient Etrurian and Oscan languages, and wrote *Inscriptiones Umbriæ et Oscæ* (1841). In 1842 he was charged with the Prussian scientific mission to Egypt and Nubia; the result of his researches appeared in *Denkmäler aus Ägypten und Äthiopien* (1849-60). Appointed professor in Berlin (1846), he led the way to a fuller scientific knowledge of Egyptian history with his *Chronologie der Ägypter* (1849) and *Über den ersten Ägyptischen Götterkreis* (1851). He wrote numerous other philological works; was a member of the Royal Academy, and

a director of the Egyptian section of the Royal Museum. See Ebers's *Richard Lepsius, ein Lebensbild* (1855; Eng. trans. 1887).

Leptinella, a genus of hardy herbaceous plants, order Composite, natives of Australia and New Zealand. A few of the species are cultivated in gardens.

Leptis. (1.) MAGNA, or NEAPOLIS, the modern Lebda, seapt., N. coast of Tripoli, Africa. It was a Phœnician colony, and possessed a flourishing commerce. (2.) L. MINOR, city in N. Africa, a little N. of the ancient Thapsus in Tunis. It was a Phœnician colony. See Davis's *Ruined Cities within Numidian and Carthaginian Territories* (1862).

Leptospermum, a genus of half-hardy shrubs, order Myrtaceæ. They are natives of Australasia. They have small, hard leaves, and bear white flowers. Among the species are *L. flavescens*, *L. attenuatum*, *L. myrtifolium*, *L. laevigatum*, and *L. scoparium*. The leaves of *L. lanigerum* were used by the early settlers in Tasmania as a substitute for tea leaves.

Lepus, an ancient constellation situated beneath the feet of Orion. a Leporis, called by the Arabs *Arneb* (the 'Hare'), is of 2⁷ magnitude, and of an advanced Sirian type. Burnham found 9 members in the remarkable system of 45 Leporis. Hind's 'crimson star,' R Leporis, varies from 6⁰ to 8⁵ magnitude in 436 days, and gives a spectrum marked by carbon absorption.

Le Puy, or LE PUY-EN-VELAY, tn. and episc. see, France, cap. of dep. Haute-Loire, 65 m. s.w. of Lyons by rail. It consists of a new town on flat land, and the old town, built on an abruptly sloping volcanic 'puy' or hill. Puy is a centre for the manufacture of lace and guipure. Pop. 21,500.

Lercara Friddi, tn. in Palermo prov., Sicily, 30 m. s.s.E. of Pa-

lermo; has sulphur mines. Pop. 13,500.

Lerici, seapt. and summer resort, in prov. of Genoa, Italy, 4 m. S.E. of Spezia; has silver and lead mines, and refineries. Pop. (comm.) 9,000.

Lerida. (1.) Province, Spain, in s. part of principality of Catalonia. Watered by the Ebro and its tributaries, it is a prosperous and advanced agricultural country. Area, about 4,700 sq. m.; pop. (1910) 280,275. (2.) (Anc. *Ilerda*), cap. of above prov., and fortress, on the Segre R., trib. of the Ebro, 80 m. w. by n. of Barcelona, on the railway to Saragossa. Manufactures wool, cotton, silk, leather, and glass. Pop. 21,500.

Lerins, ILES DE, group of isls. in the Mediterranean, about 2 m. off the s. coast of dep. Alpes-Maritimes, France, comprising Sainte-Marguerite, Saint-Honorat, and other smaller islands.

Leрма. (1.) Town, Mexico, in state of and 26 m. s.w. of city of Mexico. Pop. 7,200. (2.) Riv. of Mexico, rising about 20 m. w. of Mexico City, and flowing w. and s. to Lake Chapala.

Lermontov, MIKHAIL YUREVITCH (1814-41), Russian poet and novelist, of Scottish descent, born at Moscow; became an officer in the Russian army. The death of Pushkin inspired his first poem. This incurred the displeasure of the Czar, who sent him to serve in the Caucasus, where the remainder of his life, except from 1838 to 1840, was spent. He was killed in a duel. The best edition of his works is that published by Viskovatov (1891). See Macherski's *Les Poètes Russes*.

Lernældæ, a family of copepod crustaceans, in which the female is parasitic on fish and very degenerate. The members of the family are often called fish-lice.

Leros, isl. in the Sporades, Ægean Sea, 32 m. s. of Samos,

belonging to Turkey; has white marble quarries. Chief town, Marina or Leros. Area, about 25 sq. m.; pop. 3,000.

Leroy-Beaulieu, HENRI JEAN BAPTISTE ANATOLE (1842), French publicist, was born at Lisieux. His *Essai sur la Restauration de nos Monuments historiques devant l'Art et devant le Budget* (1866) was followed by *L'Empire des Tsars et les Russes* (1881-9); *La France, La Russie et l'Europe* (1888); *La Révolution et le Libéralisme* (1890); and *La Papauté, le Socialisme et la Démocratie* (1893). In 1881 he became professor of modern history at the Ecole Libre des Sciences Politiques.

Leroy-Beaulieu, PIERRE PAUL (1843), French political economist, brother of preceding, was born at Saumur. He was appointed professor of finance in the School of Political Sciences, Paris (1872), a member of the Academy of Moral and Political Sciences (1878), and professor of political economy in the College of France (1880). Leroy-Beaulieu became the leading free-trade exponent in France, and founded the *Economiste Français* (1873) to give utterance to his views. For his treatise *De l'Etat Social et Intellectuel des Populations Ouvrières* (1888) he was crowned by the Academy. He published *De la Colonisation chez les Peuples Modernes* (1874; 6th ed. 1907), *L'Etat Moderne et ses Fonctions* (1889; 3rd ed. 1900), *Traité théorique et pratique d'Economie politique* (1896; 5th ed. 1909), *Le Sahara, le Soudan et les Chemins de fer Trans-sahariens* (1904), and *L'Art de placer et gérer sa Fortune* (1906).

Lerwick, cap. of the Shetland Is., Scotland, on the E. coast of mainland, on Bressay Sound, 110 m. N.N.E. of Kirkwall, Orkney, and 340 m. by steamer from Leith. Exports fish, ponies, sheep, cattle, and knitted goods. The shores of

the sound are fringed with her-ring-curing stations. Pop. (1911) 4,654.

Lesage, ALAIN-RÉNÉ (1668-1747), French author, was born at Sarzeau, in Brittany. He went to Paris, studied law, and became a member of the bar. In 1743 he retired to Boulogne-sur-mer. Lesage may be called the first French 'man of letters,' in the modern sense of the term.

He wrote two novels of note and merit — *Le Diable boiteux*, and *Gil Blas*; also one play, *Turcaret*. His other works have fallen into merited oblivion. *Turcaret* is the first work in which a cruel realism makes its appearance. *Le Diable boiteux* is a novel whose title and scheme are both taken from the Spanish writer Guevara. *Gil Blas* is on the same lines as *Le Diable boiteux*, but is larger in scope. It is certain that Lesage took the idea of the book from the *Marcos Obregon* of Vincente Espinel, as well as the scheme and some of the adventures. The first part of the novel was published in 1715. The second part appeared in 1724, and the third in 1735. See Lintilhac's *Le Sage ('Grands Écrivains Français')*; Lanson's *Histoire de la Littérature Française* (1896); Doumic's *Histoire de la Littérature Française* (1900).

Les Andelys, tn., France, in Eure dep., 20 m. S.E. of Rouen. The ruins of a castle built by Richard Cœur de Lion are near. Pop. 5,500.

Lesbos. See MYTILINI.

Les Cayes. See AUX CAYEN.

Leschenaultia, a genus of Australian herbs and shrubs, order Goodeniaceae, including some of our most popular and beautiful greenhouse plants. *L. biloba* bears beautiful corymbs of blue flowers; *L. formosa*, solitary scarlet flowers; *L. linarioides*, yellow flowers; and *L. chlorantha*, solitary greenish flowers.

Lescot, PIERRE (c. 1510-78), famous French architect of the renaissance, of whose early life there is no record. His plans for the Louvre were carried out by himself and his friend, the sculptor Jean Goujon (1540-8). He was rewarded by many ecclesiastical gifts, and became counsellor to Francois I., Henri II., Francois II., and Charles IX. See Palustre's *La Renaissance en France* (1880).

Lèse-majesté. See LEZE-MAJESTY.

Lesghians, one of the names (Lesghs, Lezhines, Leks, and Leki) applied to the collection of petty tribes which, along with the Tchechenzes, inhabit Daghestan ('Highlands') in the Caucasus. They number some 600,000, and include the Avars, Kurins, and many smaller and wilder tribes. They are a people of fine features and physique, even for Caucasians, of high intelligence, and industrious. They proved their daring and endurance during their thirty years' struggle with Russia. The capture of their famous leader Shamyl, in 1859, brought their independence to an end. In religion they are Mohammedan Sunnites.

Lesina, isl., Austria, off the Dalmatian coast, in 43°10' N. lat.; produces dates, figs, and wine. Area, 120 sq. m.; pop. 18,000. The chief town, of the same name, is on the S.W. coast, and is a bishop's see, a seaport, and a health resort. Pop. (1911) 3,519.

Leskovac, tn., Servia, in co. of and 26 m. N. of Vranya, on the l. bk. of the Bulgarian Morava. Trade in hemp and cloth. Pop. 14,000.

Leslie, tn. on river Leven, Fife-shire, Scotland, 12 m. s.w. of Cupar; has paper and flax mills. The old church is claimed to be the original 'kirk' of James I.'s poem *Christ's Kirk on the Green*. Pop. (1911) 2,142.

Leslie, ALEXANDER, FIRST EARL OF LEVEN (?1580-1661), Scottish general, was descended from the Lesliees of Balquhan, his father, George Leslie, being captain of Blair Castle in Atholl. Though he received but a scanty education, and joined the army of Gustavus Adolphus as a common soldier, he rose to be lieutenant-general some time before 1626, when he was made a knight. During the Thirty Years' war he held the chief command under Gustavus, and in 1636 his achievements were rewarded by the rank of field-marshall. When the Covenanters resolved to withstand by force of arms the ecclesiastical policy of Charles I. (1638), Leslie obtained leave to return to Scotland, where with great energy he set himself to organize offensive and defensive preparations. When Charles set out in person against Scotland, Leslie was made lord general of the Scottish forces on land and sea; and in June 1639 he advanced southwards with an army of thirty thousand to Duns Law, this bold attitude leading to a treaty of pacification. On the resumption of hostilities (1640), Leslie advanced to Newcastle, of which he retained possession until the treaty of Ripon, Aug. 7, 1641. On the visit of the king to Scotland he was, on November 9, created Earl of Leven and Lord Balgonie. After an uneventful campaign in Ireland (1642), he returned to Scotland, and in 1644 he was appointed general of the Scottish army sent to the support of the English Parliament. Some time afterwards he successfully stormed Newcastle; and after the capture of Charles (1646), he retained him there until his delivery to the English Parliament (1647). He served as a volunteer against Cromwell at Dunbar (1650), and was afterwards captured by General Monck (1651), and confined

for some time in the Tower. He died at Balgonie, Fifeshire. See Sir William Fraser's *The Melvilles Earls of Melville, and the Leslie Earls of Leven*; Terry's *The Life and Campaigns of Alexander Leslie, First Earl of Leven* (1899).

Leslie, CHARLES (1650-1722), Irish non-juring divine and controversialist, born at Dublin; took holy orders (1680), becoming chancellor of Connor (1686). A zealous Protestant as well as a Jacobite, he lost his chancellorship for refusing to acknowledge William III. He accompanied the Pretender to Italy (1713), returning in 1721. He wrote many political and theological pamphlets, his *Short and Easie Method with the Jews* (1699) being the most notable. See *Life* by R. J. Leslie (1885).

Leslie, CHARLES ROBERT (1794-1859), English painter, of American descent, born in London. He worked under West and Allston in the Royal Academy schools. His *Sir Roger de Coverley going to Church* (1819), the first of his great series of drama-pictures, ensured his election as A.R.A., and full honours followed (1826). Queen Victoria commissioned him to paint her coronation and the christening of the Princess Royal. In 1848 he was elected professor of painting at the Royal Academy, his lectures being printed (1855). He had previously written *Memoirs of the Life of John Constable* (1843), and begun his *Life and Times of Sir Joshua Reynolds* (1865). There are fine examples of his pictures in the Tate Gallery and the South Kensington Museum. See his *Autobiographical Recollections* (1860), and Dafforne's *Pictures of C. R. Leslie* (1872).

Leslie, DAVID, LORD NEWARK (d. 1682), Scottish general, was the fifth son of Sir Patrick Leslie of Pitcairly, Fifeshire. He gained a special knowledge of

war under Gustavus Adolphus, but returned to Scotland to aid the Covenanters against Charles I., when he served as major-general under Alexander Leslie, Earl of Leven, at Marston Moor (1644). In 1645, by a rapid movement, he surprised and almost annihilated the forces of Montrose at Philiphaugh; and it was to him that Montrose, when he reappeared as the champion of Charles II., owed his defeat and capture. On Charles II. obtaining the support of the Covenanters, Leslie, under the nominal superintendence of the Earl of Leven, had command of the army raised on his behalf. For some time he completely outmanoeuvred Cromwell, and the disaster at Dunbar (1650) was doubtless caused by the incompetent urgency of the Committee of Estates. He also displayed skill in delaying Cromwell's progress northwards; and though his march on London ended in overwhelming defeat at Worcester, he did at least the best he could for a cause that had become hopeless. After Worcester he was detained a prisoner in the Tower until the restoration. He was created Lord Newark (1661). See Gardiner's *History of the Great Civil War*, and his *History of the Commonwealth and Protectorate*; Colonel Leslie's *Historical Records of the Family of Leslie* (1869).

Leslie, FRED (1856-92), English burlesque actor, whose real name was Frederick Hobson, was born in London. He first appeared there at the Royalty as Colonel Hardy in *Paul Pry* (1878). His interpretation of the title rôle in Planquette's opera *Rip Van Winkle* made him famous. After 1885 he played at the Gaiety, in association with Nellie Farren, confining himself to burlesque, in which he had no equal. See *Recollections* by Vincent (1894).

Leslie, SIR JOHN (1766-1832), Scottish mathematician and nat-

ural philosopher, was born at Largo. He went as tutor to Virginia for two years (1788); and from 1790 till 1805 occupied himself with teaching, travelling, writing, and research. He translated Buffon's *Natural History of Birds* (1793), and invented the differential thermometer and a photometer. His treatise on the *Nature and Propagation of Heat* (1804) obtained the Royal Society's Rumford medal. He became professor of mathematics at Edinburgh (1805), and professor of natural philosophy (1819). The invention of his hygrometer led to the discovery of artificial freezing (1810). His *Elements of Natural Philosophy* appeared in 1823. See Napier's *Memoir* (1838).

Leslie, or LESLEY, JOHN (1527-96), Scottish prelate, statesman, and historian, was born at Kingussie, Inverness-shire. He studied theology and civil law in Paris and Poitiers. After his return to Scotland he was admitted to holy orders, and was inducted to the parsonage, canonry, and prebend of Oyne, Aberdeenshire (1559). He became professor of canon law in Aberdeen (1562), an ordinary judge of the Court of Session and a member of the Privy Council (1565). After Queen Mary's marriage to Darnley he received the abbacy of Lindores, and was presented to the see of Ross (1566). Though opposed to the Bothwell marriage, he continued to retain the queen's confidence, and after her flight into England was her chief legal adviser in the negotiations with Elizabeth. For some time he represented the interests of Mary at the court of Rome. He became suffragan and vicar-general of the diocese of Rouen (1579), and was appointed to the bishopric of Coutances in Normandy (1591); but the distracted state of the country made it impossible

for him to obtain possession of it, and he died in an Augustinian monastery near Brussels. Leslie is now best known by his histories of Scotland: that in the vernacular, from the death of James I. to 1561, written for Queen Mary, and printed by the Bannatyne Club (1830); and the Latin history, *De Origine, Moribus, et Rebus Gestis Scotorum* (1578), the most valuable portion of which is the contemporary description of Scotland and its inhabitants. A Scottish translation made in 1596 was printed by the Scottish Text Society (1884-91). See *Letters of Mary Queen of Scots*, edited by Labanoff (1839); Irving's *Lives of Scottish Authors* (1801); Cody's Introduction to the Scottish translation of Leslie's *Latin History* (Scottish Text Society, 1888).

Lesmahagow, par. and vil., Scotland, co. of and 5 m. s.w. of Lanark. Coal is mined extensively, and fruit is grown. Pop. (1911) 11,990.

Lespinasse, JULIE JEANNE ELEONORE DE (1732-76), natural daughter of the Countess d'Albon, a leader of French society, was born at Lyons. Being early left unprotected, she went to reside with the Marquise du Deffand. Here her brilliant wit and originality attracted the attention of D'Alembert, Turgot, and Marmonet, and others of the marquise's circle soon transferred their allegiance to her, and her *salon* became famous. Her charming letters to her lover, the Comte de Guibert, were published in 1809. See *Lettres Inédites de Mlle de Lespinasse* (1887); *Life by Marquis de Ségur* (Eng. trans. 1906).

Les Sables d'Olonne. See SABLES D'OLONNE, LES.

Lesseps, FERDINAND, VICOMTE DE (1805-94), French diplomat, cousin of the Empress Eugénie, was in the consular service at Lisbon (1828) and at Alexandria,

where he received the Cross of the Legion of Honour for heroic conduct during the plague (1834-35). He also served at Tunis, Cairo, and Madrid. In 1854 he inaugurated the Suez Canal scheme, which, on account of British opposition to the work, was not begun till 1860. The canal was finished in 1869. For this he received the Grand Cross of the Legion of Honour and an English knighthood. In 1881 he commenced the Panama Canal on insufficient funds, and in 1892 the management was charged with fraud, and De Lesseps was condemned to five years' imprisonment, but was too ill to undergo the sentence. He wrote *Lettres, Journal, et Documents pour servir à l'Histoire du Canal de Suez* (1875; trans. 1876), and *Souvenirs de Quarante Ans* (1887). See G. B. Smith's *Life and Enterprises of F. de Lesseps* (ed. 1895); Bertrand and Ferrier's *F. de Lesseps, sa Vie, son Œuvre* (1887); and Bridier's *Les De Lesseps* (1900).

Lesser Antilles. See WEST INDIES.

Lessines, tn., Belgium, in Hainaut, 20 m. N.N.W. of Mons; manufactures watches, and has porphyry quarries. Pop. 10,500.

Lessing, GOTTHOLD EPHRAIM (1729-81), German critic and dramatist, born at Kamenz, Upper Lusatia, where his father was pastor primarius. Proceeding to the University of Leipzig to study theology (1746), he soon drifted to the literary and philosophical lectures. After spending the summer of 1748 at Wittenberg, he went to Berlin; he worked for the papers, translated, and wrote plays. In 1752 he went to Wittenberg and took his M.A. degree. On his return to Berlin he gave the first striking example of his critical gifts in the *Vademecum für den Herrn S. G. Lange* (1754). In 1755 he published his first important drama,

Miss Sara Sampson, described as a *bürgerliches Trauerspiel*, which shows the influence of English models. During a short stay at Leipzig he made the acquaintance of Christian Ewald von Kleist, and wrote the patriotic play *Philotas*. Lessing's third stay in Berlin (1758-60) is marked by the publication of the *Briefe die neueste Litteratur betreffend*, of which Lessing wrote fifty-four, and his friend, Friedrich Nicolai, the remainder. He also wrote his *Abhandlung über die Fabel und Fabeln*, remarkable for their conciseness. When secretary to General von Tauenzien, the governor of Breslau (1760-5), he saw something of the Seven Years' war, and gathered the materials for his *Minna von Barnhelm*. In 1766 appeared his *Lao-koon*, which overthrew the Horatian precept *ut pictura poesia*, a source of many errors in the works of the Zürich writers and their numerous followers. In the following year he published *Minna von Barnhelm*, the first of all German comedies, and still without a rival. Lessing, who had failed to obtain the post of librarian to Frederick the Great, accepted an invitation to Hamburg, where he was to direct and elevate the theatre. His criticisms of the actors and of the plays performed were collected under the title of *Hamburgische Dramaturgie* (1768-9). His knowledge of classical antiquity and scholarly methods were apparent in the *Briefe antiquarischen Inhalts* (1768) and the beautiful essay *Wie die Alten den Tod gebildet*. He next went to the little town of Wolfenbüttel as librarian to the Duke of Brunswick (1770), and wrote his fine tragedy *Emilia Galotti* (1772); while in 1774 he published, under the title *Fragmente eines Unbenannten*, some extracts from the manuscripts of Professor Rei-

marus, a freethinker, concerning the credibility of the New Testament, which led to a stormy and prolonged controversy with the orthodox Lutherans, headed by Pastor Goeze of Hamburg. Lessing showed the weakness of their polemics in a number of brilliant pamphlets, until, in 1778, the Duke of Brunswick prohibited him from issuing any more. He returned to 'his old pulpit, the stage,' and preached an enlightened religion and a broad tolerance in the noble dramatic poem *Nathan der Weise* (1779). In 1780 he summed up his views on the progressive character of religion in mankind in *Die Erziehung des Menschengeschlechts*. Lessing's grand sincerity and independence of character, and the unique combination of critical and creative powers seen in his works, make him the greatest German writer between Luther and the rise of Goethe. Goethe and Schiller looked up to him and learned from him, and to many he is still one of the world's great leaders. A considerable literature has grown up around him and his works. These were edited by K. Lachmann (re-edited by Müncker) in 15 vols. (1886-1900). There is another edition, in 14 vols., by R. Boxberger and H. Blümner in Kürschner's *Deutsche National-Litteratur*. See *Briefe von und an G. E. Lessing*, ed. Müncker (5 vols. 1904, etc.), and biographies by Danzel and Guhrauer (1850-4), Erich Schmidt (1884), Borinski (1900); in English—Sime (1877), Helen Zimmern (1878), and Rolleston (1889); in French—E. Grucker (1896); and *Lessing als Reformator der Deutschen Literatur*, by Fischer (1881). There are many English translations of the *Laokoon*.

Lesson, or **LECTION**. See **LECTIONARY**.

Leste is the name applied to the hot, dry easterly wind (usu-

ally carrying fine particles of red sand) of Madeira, and corresponds to the sirocco of Algeria and the 'brick-fielders' of S. Australia. Its occurrence is uncertain, many months sometimes elapsing between the visitations.

Lestock, RICHARD (?1679-1746), British admiral. Entering the navy, Lestock became a captain (1706), and served in the battle off Cape Passaro (1718), in the W. Indies (1741), in the Mediterranean (1742), and was present with Mathews at the battle off Toulon (1744). Lestock, who was made a full admiral (1746), the same year conducted an expedition to the coast of Brittany. See Clowes's *The Royal Navy* (1897-1903), Mahan's *Influence of Sea Power* (1890).

L'Estrange, SIR ROGER (1616-1704), English pamphleteer, was born at Hunstanton, Norfolk. L'Estrange accompanied Charles I. to Scotland (1639), was imprisoned in Newgate for complicity in a plot to seize Lynn Regis (1644), escaped to the Continent (1648), where he remained till pardoned by Cromwell in 1653. During the protectorate he issued many anonymous writings on the political situation. Under Charles II. and James II. he was a stern licenser of the press and a rough pamphleteer, displaying what Bishop Burnet called 'unexhausted copiousness in writing.' After the revolution he lost his office of licenser, and between 1688 and 1696 was several times imprisoned as a suspect. His scholarly tastes and accomplishments are revealed in his translations of Quevedo's 'Visions' (1667), Cicero's *De Officiis*, and Erasmus's *Colloquia* (1680), Aesop's *Fables* (1692), Seneca's *Moralia* (1693), and Josephus (1702); his *Memento*, in defence of the monarchy (1662); and his *Brief History of the Times*, exposing Titus Oates (1687).

Le Sueur, EUSTACHE (1617-55), French painter of historical and sacred subjects, born in Paris. His best works are in the Louvre, Paris, notably his *Prédication de Saint Paul à Ephèse* and *La Messe de Saint Martin*. See *Life*, in French, by Vitet (1849).

Letchworth, tn., near Hitchin, Herts, England. It has been laid out as a garden city, the first in Great Britain, and has a population of about 5,000.

Lethe, in ancient Greek mythology, the river in the lower world from which departed spirits drank to obtain forgetfulness of the past. It is first mentioned as a river by Plato (*Republic*, x.), but as a common-place belief. The drinking of the water of Lethe was part of the Orphic Initiatory rites (*Pausanias*, ix.), which may be compared with Dante's draught (*Purgatorio*, 28-33). See J. E. Harrison's *Prolegomena to the Study of Greek Religion* (1908).

Letmathe, tn., Prussia, in Westphalia, 16 m. s.e. of Dortmund. Pop. (1910) 7,452.

Leto, called Latona by the Romans, was, in ancient mythology, a daughter of the Titan Coeus and Phoebe. Zeus loved her, and by him she became the mother of Apollo and Artemis. Homer and Hesiod know nothing of Hera's hatred of Leto, of which later poets all speak. She was generally worshipped in conjunction with her children. See *Homeric Hymn to Apollo*.

Letterkenny, mrkt. tn., Co. Donegal, Ireland, 17 m. w. by s. of Londonderry. Pop. 2,400.

Letter of Attorney. See **POWER OF ATTORNEY**.

Letter of Credit. See **BANK—Banker and Customer**.

Letters. See **ALPHABET**, **PHONETICS**, and A, B, etc.

Letters, or epistolary writing, may be regarded as constituting one of the most attractive forms of literature. When a man ad-

dresses himself to the general public, whether in speech or writing, he inevitably suffers to some extent from the constraint of self-consciousness. But in letters written without the slightest thought of publication, as the best letters are, there are an easy charm and a naturalness which appeal to all. This ingenuous frankness is apparent in the celebrated collection known as *The Paston Letters* (ed. by Gairdner, 1904). These letters were written (1422-1509), mostly to or by members of the Norfolk family of Paston (afterwards Earls of Yarmouth), by whom they were preserved, being eventually published, for the first time, in 1823. The *Letters of Jane Welsh Carlyle* (1883, 1889) and the *Vailima Letters* (1895) of R. L. Stevenson may be named as two of the most valuable collections of recent times in the English language. The epistolary form has been frequently selected as a vehicle for didactic and political purposes. For example, the religious teaching of the early Christian apostles, as preserved at the present day, is for the most part conveyed in this shape. The direct address has an efficacy not easily attained in an impersonal treatise. Although devoted to the teaching of worldly wisdom, the *Letters of Lord Chesterfield to his Son* (1774-87) afford another instance of the choice of this method. In his *Letters of Malachi Malagrowther* (1826), Sir Walter Scott found an effective weapon for achieving a patriotic and political purpose; in *Paul's Letters to his Kinsfolk* (1815) he anticipated the brilliant war-correspondent of to-day. Among the greatest of letter-writers have been Cicero, Erasmus, Mme. de Sévigné, Horace Walpole, Charles Lamb, Cowper, and Byron.

Letters Missive are the nomination of a bishop by the king,

and are sent to the dean and chapter along with the congé d'éluire (q.v.). Formerly a peer cited as defendant in a Chancery suit was served by the Lord Chancellor with a letter missive.

Letters of Marque, a commission issued by a government, authorizing masters of merchant ships, privateers, and others to capture prizes and property on the high seas or in harbour, by way of reprisals for damage done. By the Declaration of Paris in 1856, the granting of letters of marque was abolished. See PRIVATEERS; DECLARATION OF PARIS; also Hall's *International Law* (5th ed. 1904), and Wheaton's *International Law* (4th ed. 1904).

Letters Patent. See PATENTS.

Letter-wood, the mottled brown heart-wood of *Brosimum Aubletii*, a tree native to Trinidad. It is used as a veneer.

Lettres de Cachet. In France, before the revolution, the king had power to issue sealed letters to governors of prisons and others, authorizing them to arrest and detain the persons named therein. The letters were frequently issued by the king in blank, and distributed by the ministers to those who wished to rid themselves of troublesome relations. They were abolished by the National Assembly (1789).

Lettres Portugaises. See ALCORARDO MARIANNA.

Lets, an Indo-European people akin to the Lithuanians, mainly occupying the Russian governments of Livonia and Courland. They are mostly Lutherans.

Lettuce, an annual plant, *Lactuca sativa*, a native of Eastern and Central Asia, and Southern Europe. It was introduced into England from Flanders about 1520. It has long

been cultivated as a salad plant, and was grown by the ancient Greeks and Romans for this purpose.

Leucadendron, a genus of S. African trees and shrubs, order Proteaceæ. The best known species is *L. argenteum*, the silver-tree or wittebroom, with its beautiful, long, silvery-white leaves.

Leucadia. See LEUKAS.

Leuchars, par. and vil., Fife-shire, Scotland, 5 m. N.W. of St. Andrews. The church, 12th century, has a Norman apse and chancel. Pop. (1911) 2,605.

Leucine, or AMINO ISOBUTYLACETIC ACID, $(\text{CH}_3)_2\text{CHCH}_2\text{CHNH}_2\text{COOH}$, found in several animal and vegetable juices. It is formed by the decomposition of albuminoids in digestion, or by the action of acids and alkalis, and occurs in fatty crystalline plates, slightly soluble in water.

Leuciscus, a genus of Cyprinidae, to which the general name of 'white fish' may be given. For examples, see ROACH, DACE, and MINNOW.

Leucite, potassium and aluminium silicate found in the lavas of Vesuvius, in which it forms white or ash-gray, rounded, many-faced crystals ($\text{h.} = \frac{1}{2}$, sp. gr. 2·5), mostly embedded in a black crystalline rock. It is found also in Rhenish Prussia, Australia, N. America, and other parts of the globe. Leucite is interesting to the mineralogist because of its apparently anomalous structure and optical properties. At first glance its crystals would seem to belong to the cubic or isometric system; yet they are not isotropic, but in polarized light are seen to be built up of a complex series of intersecting lamellæ. These disappear when the section is heated to a temperature of about 500° C., and the crystal becomes isometric both in its external form and internal properties.

Leucocoryne, a genus of half-hardy bulbous plants, order Liliaceæ. They bear few-flowered, terminal umbels of white or blue salver-shaped flowers. The two species most often seen are *L. tectorum* and *L. alliacea*, both natives of Chile.

Leucocrinum, the sand lily of Colorado, is a liliaceous genus containing the one species *L. montanum*. This is a dwarf-growing, hardy plant, bearing, close to the ground, clusters of white, funnel-shaped, fragrant flowers in early spring.

Leucocythaemia (Gr. *leukos*, white; *kytos*, cell; *haima*, blood), or **LEUKÆMIA**, is a disease characterized by great increase in the number of white corpuscles present in the blood, and generally by some decrease in the red corpuscles. Two forms are recognized, one of which is associated with changes in the spleen and the bone marrow, and is known as the spleno-medullary type. In advanced cases the spleen is enormously enlarged. The other form is the lymphatic, which is accompanied by enlargement of the lymphatic glands throughout the body, and of the spleen to a less degree. All forms of the disease are intractable, although many of them show temporary improvements or remissions. Arsenic and iron are the drugs which have proved to be of most service.

Leucocytosis. The term applied to an increase above the normal of the white blood corpuscles (leucocytes) in the circulating blood. Under normal conditions the average number of leucocytes varies considerably in different individuals, but the average may be taken as 6,000 and 10,000 per c.mm.; this may be increased under certain physiological conditions, such a change being spoken of as physiological leucocytosis. It occurs notably during the process of digestion—

digestive leucocytosis—and in pregnancy, but in any case it rarely exceeds 20 per cent. of the normal number. Leucocytosis may be characterized by an increase either in the small mono-nucleated leucocytes or larger multi-nucleated (polymorpho-nuclear) leucocytes. Information of the greatest value in diagnosis can now be obtained from a careful examination of stained blood films. In the great majority of cases of pathological leucocytosis the increase in number is due mainly and often exclusively to an increase in the polymorpho-nuclear granular leucocyte; the term lymphocytosis is applied to an increase in the number of mono-nucleated leucocytes. Ordinary leucocytosis, due to an increase of the polymorpho-nuclear leucocyte, occurs in a great many different conditions—e.g. most acute inflammatory conditions such as pneumonia, septicæmia, diphtheria, etc.; also in some chronic diseases—e.g. gout, cachexia of malignant disease, chronic Bright's disease; and after administration of certain drugs, notably pilocarpin and nucleic acid. The actual number of leucocytes in such conditions varies greatly, an increase to 15,000 or 30,000 being common, especially in pneumonia. Certain important infective conditions are characterized by an absence of leucocytosis, or leucopenia, as it is termed—e.g. typhoid fever, malaria, tuberculosis, and influenza. In these conditions the number tends to be below the normal, a leucocyte count of 3,000 or 4,000 being common. An increase in the number of small mono-nucleated cells (lymphocytosis) is a very striking feature in whooping-cough. The examination of the blood thus gives information of the greatest value in diagnosis. The leucocytes are the chief agents of defence against toxins

of all kinds, and they are normally produced in the bone marrow. The presence of certain poisons in the blood attract the leucocytes, leading to their increased production in the bone marrow and emigration into the blood stream. This is spoken of as positive chemotaxis. Other poisons do not similarly attract them, but are neutralized in other ways. Examination of the blood by this method also gives information of value in the prognosis of disease. Thus in pneumonia and other infective diseases which are taking a turn for the worse the leucocytosis may disappear, and even give place to a leucopenia. This is an unfavourable omen, and indicates an exhausted state of the bone marrow as regards its leucocyte-forming function.

Leucolum, or SNOWFLAKE, a genus of hardy, bulbous plants, order Amaryllidaceæ. They have usually long, narrow leaves, and pendulous white flowers, remotely like those of the snowdrop. The principal species are *L. vernum*, which bears fragrant, white, green-tipped flowers in spring; *L. aestivum*, which flowers a little later; and *L. Hernandezii*, also a summer bloomer.

Leucoma, or ALBUGO (Gr. *leukos*, 'white') is an exceedingly dense white cicatrix which sometimes follows deep ulceration of the cornea. When situated near the centre of the pupil, it seriously impairs the vision of the affected eye. Should the ulceration be sufficiently deep to perforate the cornea, the iris not infrequently protrudes and becomes incorporated in the cicatrix, the condition then being known as leucoma adherens. Many corneal opacities clear up to some extent in the course of time, and should they be superficial, gentle massage of the eye accelerates their resolution. If, however, a leucoma is permanent, large, or centrally

situated, it may interfere with vision to such an extent that iridectomy, or the making of an artificial pupil, is advisable should there be enough clear corneal tissue available for the operation.

Leucopogon, a genus of tropical and subtropical evergreen shrubs, order Epacridaceæ. They bear terminal axillary spikes of small white flowers. Most of the species are natives of Australia, among them being *L. verticillatus*, *L. Richei* (the native currant), a winter blooming kind, *L. australis*, also a winter bloomer, and *L. ericoides*.

Leucospermum, a genus of S. African evergreen shrubs, order Proteaceæ. They have hairy leaves and solitary sessile flowers. *L. medium*, which bears hairy, orange-coloured flowers in early summer, and *L. grandiflorum* are the best species for greenhouse cultivation.

Leuctra, small tn. in Boeotia, ancient Greece, famous for the great victory gained in its neighbourhood by the Thebans over the Spartans (371 B.C.), which practically ended Spartan supremacy in Greece.

Leukas, LEVKAS, or LEUCADIA, known to the Italians as Santa Maura, isl. in the Ionian Sea, off the coast of Acarnania, in W. Greece, 50 m. s.e. of Corfu. It is about 20 m. long and 8 m. at most in breadth, and has an area of about 100 m. The chief products are currants, wine, and oil. Its capital is Amaxichi or Leukas, on the N.E. coast. Its name 'Whiteland' is due to the chalky nature of its hills, the highest of which attain to an elevation of 3,700 ft. According to legend, Artemisia, queen of Halicarnassus, and the poetess Sappho both flung themselves into the sea from the bold Leucadian headland. Colonized by Corinthians about 650 B.C., they made it an island

by cutting a canal through the narrow isthmus which connected it with the mainland. Dr. Dörpfeld identifies this island, and not Thiaki, with the Ithaca of Ulysses (see Goossler's *Leukas-Ithaka*, 1905).

Leukerbad, wat.-pl., with hot springs, canton Valais, Switzerland, at the s. foot of the Gemmi Pass. Alt. 4,629 ft. Pop. (1900) 600.

Leuthen, vil. of Lower Silesia, Prussia, 9 m. w. of Breslau. Scene of a victory gained on Dec. 5, 1757, by Frederick the Great over the Austrians. Pop. about 800.

Leutschau, or LÖCSE, royal free city of Hungary, in Zips co., 38 m. N.W. of Kaschau. It has a 13th-century church, and a printing house dating from the 16th century. Pop. 8,000.

Leutze, EMANUEL (1816-68), German-American historical painter, born at Gmünd, Württemberg, educated in America, and studied art in Düsseldorf, making his home there until 1859, when he went to the United States, where he received a commission to paint *Westward the Star of Empire takes its Way* for the capitol at Washington. Among his other works are *Columbus before the Council at Salamanca* (1841), *Cromwell Visiting Milton*, and his *chef-d'œuvre*, *Washington Crossing the Delaware* (now in the Kunsthalle at Bremen).

Leutzsch, tn., Germany, in Saxony, circle of Leipzig. Pop. (1910) 12,327.

Levaillant, FRANÇOIS (1753-1824), French ornithologist and traveller, born in Dutch Guiana. He undertook explorations in Central Africa (1781-5). The results of his researches appeared in *Voyage dans l'Intérieur de l'Afrique* (1790), *Histoire Naturelle des Oiseaux d'Afrique* (1796-1812), and *Histoire Naturelle des Oiseaux du Paradis et des Rolliers* (1806).

Lévant, a name first applied by the Italians to the Mediterranean Sea and the regions adjoining it to the E. of Italy, now used of the east end of the Mediterranean and the adjoining countries. See Harts's *A Levantine Log-Book* (1905).

Levanter is the name applied to an east wind very prevalent on the African coast during the summer; evidently related to the north-east trade winds.

Levant et Couchant. In some commons the commoner may depasture on the common as many cattle ('levant et couchant'—i.e. by day and by night) as his holding will support in the winter. Also, a landlord may, after giving notice to the owner, distrain for rent cattle 'levant et couchant' on his tenant's land—i.e. trespassing thereon for not less than twenty-four hours.

Levanto, seapt., Italy, in Genoa prov., 12 m. W.N.W. of Spezia. Pop. 5,000.

Leveche is the hot, dry southerly wind of Spain, which comes from the moderately high lands of Africa. It is of the nature of the sirocco.

Levée (Fr. *lever*, 'to rise'), a morning reception held by the sovereign or his representative of those gentlemen whose rank or position entitles them to be present. The name is due to the fact that these receptions were first held by the kings of France in their dressing-rooms in the morning. A levée in Britain differs from a drawing-room or court in that only gentlemen are present.

Level. (1.) An instrument for obtaining the direction of a line parallel to the horizon, or testing the horizontality of surfaces. It depends in its various forms on the principle that the surface of a liquid at rest is horizontal. The water-level, which is the simplest variety of the instrument, consists of two glass phials

fixed vertically at the ends of a straight metal tube, with which they communicate below. Coloured water is poured into the instrument so as to fill the tube and phials nearly to the top of the latter, so that if the tube is fixed in a nearly horizontal position on a stand, the true horizontal line will be the line of sight over the surface of the water in the two phials. Instruments based on the spirit-level are, however, much more accurate and convenient. The spirit-level consists of a glass tube bent into a portion of the arc of a very large circle, filled all but a small bubble with alcohol, and mounted in a case so that the plane of the arc is vertical. As the bubble represents the free surface of the liquid, it seeks the highest position it can, which, when the instrument is horizontal, is in the middle of the tube, but when either end is raised, moves towards the higher side. For rough purposes circular levels are sometimes employed, and consist of a brass case with slightly convex glass cover. The case is nearly filled with alcohol as before, and, in accordance with the above principle, is adjusted so that the bubble is quite central when the level is on a horizontal surface. For levelling for surveying purposes, see SURVEYING AND LEVELLING; THEODOLITE. (2.) A level in mining is a horizontal gallery run to connect shafts and to open the ground. See MINING.

Level Crossings. By the Level Crossings Act, 1839, the Railway Regulation Act, 1842, and the Railway Causes Consolidation Act, 1845, a railway company must erect gates at a level crossing over a public road, and keep them closed across the road, unless the Board of Trade allows them to be kept closed across the railway; and where the crossing

adjoins a station, the speed must not exceed four miles an hour.

Levellers, the name of an ultra-republican party in England during the civil war which was powerful in Parliament in the earlier years of the commonwealth. After the death of Charles I., they broke out, in 1649, into open mutiny, but were suppressed by Fairfax. See *Political History of England*, vol. vii. (1907).

Leven. (1.) Coast tn. and summer resort at mouth of the Leven, E. Fifeshire, Scotland, 6 m. N.E. of Thornton Junction; has fine golf links. Industries: flax-spinning, linen-weaving, seed-crushing, and coal-mining. Pop. (1911) 6,559. (2.) Loch, Kinrossshire, Scotland, 9 m. N.W. of Kirkcaldy. Altitude, 350 ft.; length from N.W. to S.E., over $3\frac{1}{2}$ m.; breadth, from $2\frac{1}{2}$ m. to $1\frac{1}{2}$ m.; greatest depth, 83 ft.; total area, about $5\frac{1}{2}$ sq. m. On Castle Island are the ruins of the castle in which Mary Queen of Scots was imprisoned (1567-8). Loch Leven is famous for its trout, which are of a pink colour and a delicate flavour. The angling season begins on February 5, and ends on August 31. See Burns-Begg's *History of Loch Leven Castle* (1877). (3.) Sea-loch, Scotland, branching E. from Loch Linnhe, and forming the boundary for 12 m. between Argyllshire and Inverness-shire, Scotland. Works have been constructed at Loch Leven to generate electricity on a large scale for manufacturing purposes by water-power. See KINLOCHLEVEN.

Levenshulme, tn., Lancashire, England, 3 m. S.S.E. of Manchester; has calico and bleaching. Pop. 12,000.

Lever, one of the simple mechanical powers. It consists of a rigid rod or frame, one point of which, known as the fulcrum, is fixed in position. A force or

pressure applied at some one point can always be balanced by an appropriate force or pressure applied at another point. The balance in its various forms is a lever; but perhaps the most typical example is the crowbar, by means of which large weights are overcome by use of comparatively small forces. To find the relation of the weight overcome to the power which overcomes it, we multiply each by its distance from the fulcrum. There are many forms of simple machines which come under the category of levers, such, for example, as scissors, nut-crackers, tongs, forceps, pincers, pump-handles, the two-pronged head of a hammer when used for drawing out nails, and so on. It will be noticed that there is no necessity for the fulcrum to be between the power and weight. The movements of the limbs, fingers, and head of the human body give many interesting illustrations of the action of levers. In the majority of cases, the power is applied by means of the appropriate muscle at a point close to the fulcrum. The wheel and axle, the capstan, the crank, and other instruments, are all special types of what might be called continuously acting levers; and in the act of rowing, the oar is a lever, with fulcrum where the blade meets the water, and weight at the rowlock.

Lever, GREAT and LITTLE, two pars. in Lancashire, England, about 2 m. s.e. of Bolton. Both have coal-mining. Little Lever has cotton mills and paper and chemical works. Total pop. 10,000.

Lever, CHARLES JAMES (1806-72), Irish novelist, born at Dublin. After spending two years in Holland and Germany and making a visit to Canada, he settled down in his native city, and began to contribute fiction to the *Dublin University Magazine*. In that journal his first two novels,

Harry Lorrequer (1839) and *Charles O'Malley* (1841), appeared as serials. In 1842 he became editor of the magazine, and from that time till 1872 he published novels in rapid succession. His books are brilliant sketches of Irish life and character, full of rollicking humour. A complete edition of his works (37 vols.) was issued by his daughter (1897-9). See *Life* by Fitzpatrick (1897), and E. Downey's *Charles Lever, his Life in his Letters* (1906).

Lever, SIR WILLIAM HESKETH (1851), chairman of the soap-making firm of Lever Bros., Port Sunlight, born at Bolton. He was Liberal M.P. for the Wirral Division of Cheshire (1906-10), and has taken a prominent part in the affairs of the Congregational Church and in advocating the claims of Nonconformists in Parliament. In 1911 he received a baronetcy.

Leveret. See **HARE**.

Leverrier, URBAIN JEAN JOSEPH (1811-77), French astronomer, was born at St. Lô, Normandy. Appointed professor of astronomy in the Ecole Polytechnique, Paris (1837), he prosecuted Laplace's work in celestial mechanics. His *Tables de Mercure* were published in 1843. At Arago's bidding he attacked the problem of Uranus, and solved it by the discovery of Neptune, found from his indications, Sept. 23, 1846. Having entered the Legislative Assembly (1849), he was named senator by Napoleon III., and became director of the Paris Observatory (1854). His reforms excited hostility, and he was removed (1870), but was reinstated by Thiers in 1873.

Levertin, OSCAR (1862), Swedish novelist and poet, born in Östergötland; was lecturer at Upsala (1889-93), and at Stockholm (1893-1901), and professor in Upsala (1901). His earlier novels were materialistic, but his

poems, *Legender och Visor* (1891) and *Nya Dikter* (1894), show him to be a true romanticist. As a critic he has produced some excellent work, his subject being the literature of the 18th century, especially the Gustavan period (e.g. *Gustaf III. som dramatisk författare*).

Leveson, SIR RICHARD (1570-1605), English admiral, served against the Armada (1588). He took part in the sack of Cadiz (1596). In 1602 he captured a rich galleon from under the batteries of Cezimbra in Portugal.

Levi. See LEVITES.

Levi, LEONE (1821-88), English jurist and economist, born at Ancona, Italy, of Jewish parentage; came to England (1844) and settled at Liverpool, where he taught political economy. While secretary to the chamber of commerce in Liverpool, he collected material for his *Commercial Law of the World* (2nd ed. 1863), which led to the Mercantile Law Amendment Acts. His *History of British Commerce, 1863-70*, appeared in 1872 (2nd ed. 1880), and his *Annals of British Legislation* (1856-68).

Leviathan (Heb. *livyāthān*, probably from *livyah*, 'a wreath'—the wreathed or twisted animal), an aquatic monster (LXX., *dra-kōn*) mentioned several times in the Bible. Its description as given in Job 41 best fits the crocodile; and the reference in Ps. 74:14 is probably to the same, regarded as a symbol of Egypt or Pharaoh. But as the crocodile is not a sea-animal, the leviathan of Ps. 104:26 may be the whale; while Job 3:8 (R.V.) seems an allusion to the dragon, which was believed to have the power of eclipsing the sun and moon. Cf. also Isa. 27:1. Probably the passages refer to a myth, in which Leviathan was a monster slain by a god. See Gunhel's *Schöpfung und Chaos* (1895).

Leviathan, a British armoured cruiser of 14,100 tons and 23 knots, launched at Clydebank in 1901. The ship-name, which dates in the navy from 1790, is associated with the operations at Toulon (1793), Howe's victory of the 1st of June (1794), the capture of Minorca (1798), and the battle of Trafalgar (1805).

Levico, tn., Austria, in Tyrol, 10 m. E.S.E. of Trent; has mineral springs. Pop. (1911) 6,682.

Levis, or POINT LEVI, cap. of Levis co., Quebec, Canada, on the r. bk. of the St. Lawrence, opposite Quebec; has graving dock and extensive wharves. Pop. 7,300.

Levita, ELIAS (1465-1549), Jewish grammarian and exegete, born in Germany. His real name was ELIA LEVI BEN ASHER, surnamed PAKHUR. His writings include works on the Psalms, Job, Proverbs, and Amos, a Hebrew grammar, and a Talmudic and Targumic Dictionary. See his *Life* by J. Levi (1888).

Levites. Levi (derivation uncertain; Wellhausen regards it as a Gentilic formed from Leah, the name of Levi's mother) was the third son of Jacob. According to Gen. 34:25, he joined with Simeon in avenging the dishonour of Dinah, which, as the Shechemites were attacked in violation of a treaty, was severely condemned, and its perpetrators doomed to dispersion (Gen. 49:5). How the truculent tribe of Levi became the priestly order of the whole nation is probably to be explained by the personality and work of Moses, a Levite by birth, and the brother of Aaron, the founder of the priesthood. In the settlement of Canaan no territory was assigned to the Levites, but forty-eight cities were granted to them, and above all the privilege of serving the sanctuary, as being devoted to God instead of the firstborn

(Num. 3:12). The three sons of Levi were Gershon, Kohath, and Merari, whose special tasks are detailed in Num. 3:17 ff. The development of the priesthood can be traced in the various codes of the Pentateuch: thus, in the Book of the Covenant (JE) any Israelite may act as priest (cf. Ex. 20:24 f.); in Deuteronomy the phrase is 'the priests, the Levites' (17:9)—i.e. the priests are identical with the Levites; in the Priestly Code, only Aaron and his sons are priests (Lev. 21, 22), while the Levites are inferior ministrants and the servants of Aaron (Num. 8:19). See Curtiss's *The Levitical Priests* (1877), Baudissin's *Geschichte des Altesten Priesterthums*, and Hoonacker's *La Sacerdoce Lévitique*.

Leviticus, the third book of the Bible, derives its name, through Latin, from the Greek *Leuitikon*, its Hebrew title being *Vayyikra* ('And he said'), its opening word. It is almost entirely concerned with the ritual of the Levitical system, and has been aptly called the literary monument of the Hebrew priesthood. The whole book is assigned by scholars to P (see HEXATEUCH), but with the proviso that this symbol indicates a school rather than a single writer, and various strata are discriminated. The law of holiness (Ph) is the oldest portion, and forms one of the three great legal codes of the Hebrews. Between it and Ezekiel many resemblances are traceable; and it probably attained its present form shortly after that prophet's time, the whole book being of still later date. See Commentaries by Keil (1870), Lange (1874), Strack (1894), Dillmann (ed. Ryssel, 1897), Bäntsch (1900), Bertholet (1901); see also literature under HEXATEUCH.

Levkas. See LEUKAS.

Levkosia. See NICOSIA.

Levulose. See FRUCTOSE. **Lewald, FANNY** (1811-89), German novelist, a native of Königsberg, spent most of her life in Berlin, where she married Adolf Stahr, the author. Her novels were very popular, the most successful being *Diogena, Roman von Iduna Gräfin Hahn-Hahn* (1847), *Von Geschlecht zu Geschlecht* (1863-5), *Die Erlöserin* (1873), *Neue Novellen* (1877), and *Stella* (1884). She was a strenuous advocate of woman's rights. Her autobiography, *Meine Lebensgeschichte*, was published in 1861-3.

Lewes, munici. bor. and co. tn., Sussex, England, on the Ouse, 8 m. N.E. of Brighton, and 7 m. from the port of Newhaven. Trade in wool, sheep, cattle, and farm produce. At Lewes was fought (1264) the battle in which Henry III. was defeated by Simon de Montfort. Area, 1,042 ac. Pop. (1911) 10,972.

Lewes, GEORGE HENRY (1817-78), English man of letters, born in London, the grandson of Charles Lee Lewis, a comedian of some repute. He studied medicine, but soon abandoned it for literature. His early writings were chiefly to periodicals. The most important were those on the drama, republished as *Actors and the Art of Acting* (1875). Lewes was editor of the *Leader* (1849-54), founded the *Fortnightly Review* (1855), and was for a time its editor. His connection with George Eliot, which commenced in 1854, only ended with his death. (See ELIOT, GEORGE.) Lewes's earlier works, including two novels, took no permanent place in literature; afterwards he turned his attention to biology and philosophy. The most important of his later works are *Seaside Studies* (1858); *Physiology of Common Life* (1859); *Studies in Animal Life* (1862); *Aristotle, a Chapter from the History of Science* (1864); *Prob-*

lens of Life and Mind (1874-9); *The Study of Psychology* (1879).

Lewis, riv. See SNAKE.

Lewis, LEWIS-WITH-HARRIS, or 'THE LEWS' (sometimes called the Long Island), the most northerly island of the Outer Hebrides, Ross and Cromarty, and Inverness-shire, Scotland, separated from the mainland by the Minch. The greatest length is 60 m., average breadth 15 m. Area, 770 sq. m. It consists of two parts—Lewis Proper (575 sq. m.) and Harris (195 sq. m.). The surface for the most part is peat and moss, and is almost treeless. Towards the N. it ends in precipitous cliffs, which form the Butt of Lewis. The shores are deeply indented, the principal openings being Broad Bay and Lochs Erisort, Seaforth, Resort, and Roag. The principal crops raised are barley and potatoes, and the chief industries are cattle-breeding and fishing. Harris is noted for its tweeds. Pop. 32,000. The only town is Stornoway.

Lewis, SIR GEORGE CORNEWALL (1806-63), English politician and author, was born in London, and educated at Eton and Christ Church, Oxford. He was intended for the bar, but he soon abandoned the bar for literature and politics. He passed in rapid succession through the posts of special commissioner on the Irish Poor (1833), on Irish Education (1834), and in 1836 on the state of Malta (with John Austin), and finally succeeded his father as an English Poor Law Commissioner (1839). Returned to Parliament for Herefordshire (1847), his prospects of promotion still further improved, and he became secretary to the Board of Control (1847), under-secretary at the Home Office (1848), and financial secretary to the Treasury (1850). He was out of office and Parliament from 1852 till 1855, when he

succeeded to his father's baronetcy, and sat for Radnor Burghs, being almost immediately appointed to the post of Chancellor of the Exchequer, whilst the Crimean war was raging. This post he held until the fall of Lord Palmerston's ministry (1858). On the return of Palmerston to power in the following year, he became Home Secretary, and, in 1863, the year of his death, Secretary for War. During his enforced retirement from politics in 1852-5, Lewis was editor of the *Edinburgh Review*, contributing many articles to its pages. He was the author of many works, the best known of which are *Essays on the Administrations of Great Britain from 1783-1830* (1864), *Remarks on the Use and Abuse of some Political Terms* (1832), *The Government of Dependencies* (1841), and *The Influence of Authority in Matters of Opinion* (1849). See his *Letters*, edited by his brother (1870), and Bagehot's *Literary Studies* (1879).

Lewis, SIR GEORGE HENRY (1833), English criminal lawyer, belongs to a legal family of Jewish origin. He made his mark in a marine insurance case (1869), and was engaged for the prosecution in Overend and Gurney. In the many newspaper libels and society cases with which Sir George Lewis has been specially identified, he has frequently secured very heavy damages. Through a series of letters to the *Times* (1900), he has done much to rid the profession of fraudulent solicitors. He was knighted in 1893 and received a baronetcy in 1902. He retired from his practice in 1910.

Lewis, MATTHEW GREGORY (1775-1818), English author, often referred to as 'Monk' Lewis, was born in London. He was educated for a diplomatic career, and in 1794 went to the Hague as attaché to the British Embassy;

and although his stay there lasted only a few months, it was marked by the production of *Ambrosto, or the Monk* (1795), a romance which achieved great popularity. His other works include a popular play (*The Castle Spectre*, 1798), translations of German romances, *Tales of Terror* (1799), and (with Scott's help) *Tales of Wonder* (1801). Two voyages to the W. Indies, to see the condition of the slaves there, led to the publication of *The Journal of a West Indian Proprietor* (1834). See *Life and Correspondence* (1839).

Lewisham, sub. (parl. and met. bor.) of London, England, on Ravensbourne R., 4 m. S.E. of St. Paul's. Pop. (1911) 160,843.

Lewisia, a genus of dwarf N. American herbaceous plants, order Portulaceæ, with only one species, *L. rediviva*, the bitter-root, whose starchy root is dug up by the Indians in spring and used as food. The plant has thick fleshy leaves, which wither on the appearance of the large handsome pink and white flowers. It is hardy in Britain as a rock plant.

Lewiston. (1.) City, Androscoggin co., Maine, U.S.A., on riv. Androscoggin, 30 m. N. of Portland, at the falls, which furnish water-power for the manufacture of cottons, wools, and machinery. Pop. (1910) 26,247. (2.) Co. seat of Mifflin co., Pennsylvania, U.S.A., 45 m. N.W. of Harrisburg. It has steel works, locomotive works, blast furnaces, and foundries. Pop. (1910) 8,166. (3.) Co. seat of Nez Perces, Idaho, 90 m. S. by E. of Spokane, Washington. It is a great mining centre. Pop. (1910) 6,043.

Lexicon. See DICTIONARY.

Lexington. (1.) City, Kentucky, U.S.A., cap. of Fayette co., situated in the centre of the famous blue-grass region, 70 m. E.S.E. of Louisville. It is one of

the great horse markets of the world. Manufactures whisky, tobacco, hemp, and wagons. Pop. (1910) 35,099. (2.) Town, Middlesex co., Massachusetts, U.S.A., 10 m. N.W. of Boston, famous as the scene of the first contest in the revolutionary war (April 19, 1775). The chief industries are farming, dairying, and the manufacture of leather binding. Pop. (1910) 4,918. (3.) Co. seat of Lafayette co., Missouri, U.S.A., 40 m. E. of Kansas City; has coal-mining. Pop. (1910) 5,242.

Lex Loci. Many transactions are governed by the law of the place, and not by the law of the domicile of the parties. But the place may be determined in several ways: for example—(1) *Lex loci residir*, the law of the place where the thing is situated—e.g. land is always governed by the law of its situation; (2) *Lex loci contractus* or *celebrationis*, the law of the place where the contract is made; (3) *Lex loci solutionis*, the law of the place where the contract is to be performed.

Leyburn, par. and mrkt. tn., N. Riding, Yorkshire, England, 16 m. W. by S. of Northallerton. Pop. (1911) rur. dist. 6,303.

Leycesteria, a genus of hardy, deciduous shrubs, order Caprifoliaceæ, natives of the Himalayas. The genus contains but one species, *L. formosa*, a handsome, rambling plant, bearing drooping racemes of sessile white flowers.

Leyden, or LEIDEN (anc. *Lugdunum Batavorum*), tn., Netherlands, prov. S. Holland, on the Old Rhine, 9 m. N.E. of the Hague, the seat of a famous university, founded in 1575, and attended by about 1,200 students. Amongst its better known teachers have been Arminius and Gomarus, Grotius, Descartes, Scaliger, Salmasius, Ruhnken, Hemsterhuis, and Boerhaave. The painters Rembrandt, Lucas van Leyden, Jan Steen,

Gerard Douw, and Van Mieris were all natives of Leyden, as well as the Anabaptist leader, Jan Bockold, or John of Leyden, and some of the Elzevirs, the printers. In the 14th century the town was famous for its cloth and baize. These are still made, as are also woollens, cottons, leather, soap, and salt. In 1573-74 the town heroically resisted the Spaniards. Pop. (1910) 58,253.

Leyden, JOHN (1775-1811), Scottish poet and Orientalist, born at Denholm, Roxburghshire, where his father was a shepherd. He was educated at Edinburgh University, where his career was brilliant. Destined as a preacher, Leyden was licensed in 1798. But failing sadly in his pulpit appearances, he drifted into literature. With Scott he was on terms of closest intimacy, and in the preparation of the *Minstrelsy* there was no more valued helper. Leyden was a born balladist, and several of his compositions adorn the volume. He graduated M.D. of St. Andrews (1803) after six months of 'incessant day and night study.' Sailing for India, he occupied during the next seven or eight years a number of important governmental positions, and died at Java at the early age of thirty-six. His chief poem, *Scenes of Infancy* (1803), is a universal favourite in Teviotdale. His best piece is probably the *Address to an Indian Gold Coin*. See Memoir by Scott Morton (1819) and Robert White (1858), Crockett's *The Scott Country* (1902), and the recently discovered *Tour in the Highlands* (1903), which contains an admirable bibliography of his life and writings.

Leydenburg. See LYDENBURG.

Leyden Jar. See ELECTROSTATICS and CONDENSER.

Leyds, WILLEM JOHANNES (1859), minister-plenipotentiary

of the late South African Republic (1898-1900), the chief adviser of Kruger after the Jameson raid. Appointed attorney-general (1884), he held that post until he was elected state secretary (1888), and re-elected (1893 and 1897). He resigned the office (1898) to become plenipotentiary in Europe; but since the annexation of the republic he has disappeared from public life. He was always credited with violent anti-English opinions. He has published the *First Annexation of the Transvaal* (1906).

Leyland, par. and tn., Lancashire, England, 5 m. s. of Preston; has cotton mills and bleach-works. Pop. (1911) 8,090.

Leyland Steamship Line. This steamship line was founded by F. R. Leyland, after whose death in 1892 it was converted into a company, being re-formed in 1900 with a capital of £2,800,000. The company owned the Leyland line of steamships, consisting of a fleet of 34 vessels, with an aggregate tonnage of 247,110 tons, and carrying passengers and goods between Liverpool and the Continent, the United States, Canada, W. Indies, Mexico, and other countries. In 1901 a large interest in the company was acquired by American financiers.

Leys, HENDRIK, BARON (1815-69), Belgian historical and *genre* painter, was born at Antwerp. He made the 'resuscitation of a national art' his aim, and painted the illustrations of Flemish history in the Hôtel de Ville, Antwerp. *The Armourer* is at Windsor, and *The Knight's Funeral* in the South Kensington Museum. See Sulzberger's *Henri Leys* (1885).

Leyssera, a genus of S. African evergreen, herbaceous plants, order Compositæ. *L. gnaphalooides*, with orange flower-heads, and *L. capillifolia*, yellow, are the best-known species.



The 'Chorten' at the entrance to Lhassa, with the Potala.

Photo by Messrs. Hoffmann, Calcutta.

Leyte. (1.) Prov. and isl., Visayas group, Philippines, N. of Mindanao. Area, 3,872 sq. m. The interior is mountainous; highest peak, Mount Sacripante (3,930 ft.). The principal crops are hemp, rice, sugar, coffee, cotton, and corn. Minerals are abundant. The chief manufactures are cocoanut oil and hempen goods. Pop. (all civilized) 390,000. Cap. Tacloban, on the N.E. coast. (2.) Pueblo, in above prov., on the N.W. coast, 37 m. N.W. of Tacloban. Pop. 7,000.

Leyton, par. and tn., Walthamstow div., Essex, England, on Lea R., 8 m. w. of Romford, is a N.E. suburb of London; has Roman remains. Pop. (1911) 124,736. The par. includes the dist. of Leytonstone to the E.

Lezayre, par. and vil., Isle of Man, 2 m. w. of Ramsey. Pop. 2,800.

Leze-majesty (cf. mod. Fr. *lésier*, 'to injure'), an insult to, or an offence committed against, the person of the sovereign, punishable by death. It comes under the law of treason, of which the essential features are traceable to an act of Edward III. Abroad leze-majesty includes many less serious offences.

Lezignan, tn., France, in Aude dep., 12 m. w. by N. of Narbonne. Pop. (comm.) 6,300.

Lhassa, LASSA, HLASSA, or LOSA ('Abode of the Divinity,' 'of the Divine Intelligence,' 'of the Venerable One'), cap. of Tibet, metropolis of Lamaite Buddhism, seat of the 'Dalai Lama' ('Sea of Wisdom'), the head of the government, chief tn. of U or UI prov., 500 m. N.N.E. of Calcutta, 25 m. from the junction of the Ki-chu with the Upper Brahmaputra (Sanpo), over 11,800 ft. above sea-level, in $29^{\circ} 39' 20''$ N. lat., and $91^{\circ} 5' 46''$ E. long.; population fluctuating, but considered by recent travellers as not much exceeding 15,000. Lhassa is

well built for an Asiatic town. Among the leading monasteries are those of Miru or Muru, on the N., a centre of literary Lamaism, with a printing press; Daibun or Daibung, seven miles N.W. of central Lhassa, and the largest monastery of the sacred town (8,000 to 8,500 monks); Sera, three miles to the N., renowned for its ascetic hermits, as Daibun is for its seers, or the more distant Galdan (twenty miles to the S.E.) for its relics. The cathedral, Jowo-khang, the true Lhassa, or 'place of the gods,' standing in the south-central portion of the town, not far from the circular pilgrim road, and Potala, the palace of the Dalai Lama, w. of the city proper, are the chief sights of Lhassa. The present residence of the Buddhist pope, a towering building of four stories, on the summit of the 'Haven hill' which rises abruptly out of the plain in which Lhassa stands, and terminating in five gilded domes, was an offering from Kanghi, first Manchu emperor of China. From the 7th century A.D. the Potala mount has been one of the holiest places of the Buddhist world. Its treasury contains a famous collection of sacred objects both old and new. To the S.W. of the Potala is the summer residence of the Grand Lama, the medical college of Chagpa hill, the palace of the ex-regent Kun-de Ling, and the Lama's Shuktri throne-garden; to the N.W. are the palaces of the Grand Lama's parents; to the E. is the main body of the city; to the S.E. the Chinese residency, theatre, barracks, and vegetable gardens, and the Lama's Tse-drung pleasure park.

The principal industry of Lhassa is woollen manufacture, but silk stuffs, tea, and other Chinese products are here exchanged for Indian, European, Russian, and other wares. Musk, yak tails,

sable furs, dried fruits, sugar, rice, tobacco, indigo, hardware, drugs, sweetmeats, velvet, linen, incense, articles of Buddhist worship, gems, and shawls, are also among the articles of local trade (import or export). The chief merchants and bankers are Moslem, originally from Kashmir, but now settled for centuries in Lhassa, and called Kachis. The trade in linen, silk, cloth, most articles of luxury and of dress, is also in their hands. The metal-working and colouring industries are controlled by the Indian (Bhutanese or Nepalese) Pebuns; the Chinese colony is mostly composed of government officials, soldiers, and religious students.

Lhassa was perhaps visited by the Franciscan traveller Odoric of Pordenone in about 1328, on his way home from China to Europe; if so, he was the first European to see it. In the 17th and 18th centuries several Jesuit and Capuchin missionaries (Andrade, 1624; Grueber and Dorville, 1661; Desideri, 1716-29; Della Penna, 1719-41) penetrated to Lhassa, as well as the Dutch layman Van de Putte (1724). After 1760 access was forbidden to Europeans; but a few have eluded the restriction since, such as Manning in 1811 and Huc and Gabet in 1844. On August 3, 1904, a military expedition from British India arrived at Lhassa, and on September 7 a treaty was signed in the Potala palace, by which trade facilities with British India were increased, and the exclusive attitude of the Tibetan government was somewhat modified. In Feb. 1910 the Dalai Lama suddenly left Lhassa, alleging that his power and security were menaced by the Chinese, who thereupon deposed him. He fled to India. Buddhism was not firmly established in Tibet until the 4th century A.D., and the importance of Lhassa

as the Rome of this religion was largely the result of the ruin of the faith in Hindostan between the 6th and 11th centuries. See Sarat Chandra Das's *Journey to Lhasa* (new ed. 1904), Waddell's *Lhasa and its Mysteries, with a Record of the Expedition of 1903-4* (1905), Candler's *The Unveiling of Lhasa* (1905), and Landon's *Lhasa* (1905).

Lherzolite, a dark green or black crystalline rock which consists of olivine, enstatite, and augite (chrome diopside). It is a member of the peridotite group, and has long been known to occur at Lherz in the Pyrenees.

L'Hôpital, MICHEL DE (1507-73), chancellor of France (1560-8), born at Aigueperse in Auvergne. He tried to carry out a liberal policy during the regency of Catherine de' Medici for her son Charles IX. He opposed persecution, and held the balance between Roman Catholics and Huguenots in the civil wars. But having lost the friendship of Catherine after the peace of Amboise (1563), he resigned his chancellorship, and retired to Etampes. See *Lives* by Villemain (ed. 1874), Dupré-Lasalle (1875-99), Amphoux (1900), and Atkinson (1900).

Li. (1.) A Chinese measure of distance, equal to rather over one-third of an English mile. (2.) A Chinese coin, same as a cash.

Lia Fall, the *Fatale Marmor*, or 'Stone of Destiny,' on which the ancient Irish kings sat at their coronation, and which was said traditionally to utter a groan if the person who occupied the seat was a pretender. It was removed by Fergus, the first Scottish king (513), from Ireland to Dunstaffnage; by Kenneth II. to Scone (840); and by Edward I. to London (1296). It now forms a part of the coronation chair in Westminster Abbey.

Liana, a name given to the woody, climbing, and creeping plants of tropical forests. Among them are species of *Smilax*, *Wrightia*, and *Calamus*.

Liao-yang, city, Manchuria, prov. of Shing-king, on the railway from Mukden to Port Arthur, 40 m. s. of the former. It was the site of a great Russian defeat in the war with Japan (1904). Pop. est. at 100,000.

Lias. The Lias comprises the lowest part of the Jurassic system, and consists principally of dark gray clays with an intercalated, more calcareous series which is known as the Middle Lias or Marlstone. It rests conformably on the Rhætic beds, and passes upwards into the Inferior Oolites. Many species of fossils are found in this group of rocks, including ammonites, belemnites, marine bivalves, and great reptiles (*Ichthyosaurus*, etc.). The Lias stretches across England from the coast of Devon and Dorset to that of Yorkshire, forming a tract of flatish country, in which the harder bands of limestone stand up as minor escarpments.

Liatris, a genus of N. American perennial plants, order Composite, sometimes known as 'blazing stars' or 'button snake roots.' The flowers are usually purple or white, and the leaves narrow and entire. Among the species is *L. scariosa* ('rattlesnake's master'), a decoction of the bulbs of which is used in N. America to cure the bite of the rattlesnake.

Libanius (c. 314 to after 391 A.D.), Greek rhetorician, was a native of Antioch, but lived chiefly at Athens, Constantinople, and Nicomedia, though he returned to Antioch for the latter part of his life. Several of his works survive, the most important of them being sixty-seven speeches and more than a thousand letters, which are elegant in style and

historically important. Editions: of the speeches, Reiske (1791-7); of the letters, J. Ch. Wolf (1738). See Sievers's *Das Leben des Libanius* (1868).

Libanus. See LEBANON.

Libation, an offering of wine or other liquor made to the gods of Greece and Rome. It was the custom whenever wine was drunk first to pour a drop into the cups and then to pour it out on the ground in honour of the gods; and on special occasions whole cups were emptied, sometimes over victims sacrificed. A libation in ancient Greece was the chief ceremony in concluding a peace—the literal translation of the Greek word for a treaty of peace being 'libations.'

Libau, LIBAVA, or LEEPAJA, tn., port, and important Baltic naval station, Courland gov., N.W. Russia, 120 m. w.s.w. of Riga, and on a tongue of land between the sea and the lagoons known as Libava Lake. It is the centre of several great railways from the imperial capital and from the interior, and has good stone buildings, public gardens, and promenades. The port (on the lake) is almost ice free. The lake is connected with the open sea by canal (over 23 ft. deep) which gives access to the largest ships, and is kept open throughout the winter by ice-breakers. Chief exports—grain, timber, flax, hemp, linseed, petroleum, fish and salt meat, wool, leather, and skins. There are manufactures of wire, nails, iron and steel, wagons, rope, matches, agricultural implements, furniture, amber, and soap and oil mills. In 1909 the exports were valued at £4,913,425, and the imports at £2,205,791. There are naval dockyards, and a large meat-freezing establishment. It was acquired by Russia in 1795. Pop. 100,000, one-fourth being Jews. Libau suffered severely in the Russian disturbances of 1905-6.

Libavius, ANDREAS (1560-1616). German chemist, born near Halle; was primarily a physician, but devoted his attention largely to chemistry, and became director of the gymnasium at Coburg (1605). He published, under the title of *Alchymia* (1597), a treatise dealing with the chemical facts and theories of the time, and in opposition to the views of Paracelsus.

Libel. See DEFAMATION.

Libellatichi, a name given to those who fell away from Christianity, particularly during the persecution of the Emperor Decius (249-252 A.D.).

Libellula, a genus of dragonflies, to which belong about nine British species. An example is *L. depressa*. See DRAGON-FLY.

Liber, a name frequently given by Latin poets to the Greek god Dionysus; but the god Liber and the goddess Libera were ancient Italian deities, who protected the vine and gave fertility to the fields. Hence they were worshipped along with Ceres, and to all three (the Greek Demeter, Dionysos, and Persephone) was a temple founded at the foot of the Aventine, 496 B.C., in obedience to a Sibylline oracle, and dedicated in 493, the year of the first Secession of the Plebs, and the appointment of tribunes and plebeian ediles. The foundation was probably due to famine, from which, after the expulsion of the king, the poor suffered most. They would most readily welcome Greek worship, etc., with the Greek corn-mERCHANTS who came to their rescue. See W. Warde Fowler's *Roman Festivals* (1908) and Gifford Lectures (1910), and J. E. Harrison's *Prolegomena to Study of Greek Religion* (1909).

Liberalism, a term used in politics and in ecclesiastical controversy, and subject, therefore, to some ambiguity when it is used in both ways.

The term seems to have been first used in Spain, to indicate the advocates of freedom in church and state along what may be called constitutional lines. Liberalism was anti-clericalism, as the corresponding movement in France and Italy, however named, has generally been. But liberalism has always claimed the merit of working on constitutional lines, or of working to secure a constitution as a guarantee of freedom.

Under one name or another, liberalism appears in the politics of every modern state, but it is not always safe for a Briton to assume that the Liberal party in another land stands for the same or similar ideas as the Liberal party stands for in England.

But though there is in every modern state some body advocating liberal ideas of reform and freedom, the name is prominent in the politics of three nations only which need special reference—Germany, Canada, and England.

The German Liberal party or parties may be said to date from the revolution of 1848, when the more moderate advocates of reform separated themselves from the Radical section of the reformers. Early Liberalism was succeeded by the Nationalism of the middle of the 19th century; and out of the somewhat vague Liberal or Progressive party was formed, in 1866, the National Liberal party, which professed to seek freedom in a national unity. The party was weakened by the Free Trade controversy, which in 1880 resulted in the secession of the free traders to form one of the minor groups in German politics. Since then the National Liberals have declined in importance as a party.

In Canada the Liberal party was formed out of somewhat heterogeneous elements. Those who favoured and carried on

federation naturally supported the first administration, while the opponents of that union who had secured seats in the new Dominion Parliament were in opposition. These opponents had been drawn partly from the old reformers, and partly from the old Conservative parties. The Liberal party began to take definite shape about 1872, and in 1874 accepted office. In 1878 they were defeated in the country on the Protectionist issue, and till 1896 remained, under various leaders, in opposition. In 1896 they carried the election, and have since maintained themselves in power, but during that time they have ceased, as a party, to profess Free Trade principles.

Liberalism in England dates from the period of the Reform Act, when, owing to the extension of the suffrage, the power of the Whig houses began to decline. The Liberal party has been the reform party in English politics; but it has been, as all reform parties have been, composed of divergent and contending sections. On the one hand was the Whig element, believing strongly in freedom as already achieved, and accepting the doctrine of *laissez-faire*. The work which the Liberal party has accomplished has been mainly of a political character. It has been concerned largely with the perfecting of the political machine. The extension of the franchise may be taken as the typical example. This was promoted, not as a good in itself, but as providing an opportunity to a hitherto unrepresented class to express their demands.

The motto of the Liberal party in the middle of the 19th century—'Peace, Retrenchment, and Reform'—indicates both the strength and the weakness of the party. It pursued an essentially domestic policy. Not only was

it opposed to a spirited foreign policy, but frequently it spoke and acted as if a foreign policy were unnecessary. On one point only has the Liberal party departed from its devotion to a domestic and non-interference policy—and that is in relation to nationalism. Through its greatest leader, Mr. Gladstone, it has always shown a great regard for the principle of nationality, and has repeatedly intervened to secure the recognition and salvation of oppressed nationalities—e.g. in Italy and in the Balkans.

Modern English Liberalism differs considerably from the doctrines of the Liberal party of seventy years ago, when the individualistic and 'non-interference' policy of the Manchester school was in the ascendant. In recent years the 'radical' wing of the party has increased in power, and leanings in the direction of socialism have been detected. The most conspicuous instance of this tendency was the budget of 1909, which avowedly proposed to tax wealth according to its source rather than its amount. But no doubt all English parties to-day are much more ready to assent to interference by the state with the individual, which would formerly have been described as socialism, than were their predecessors. See Herbert Samuel's *Liberalism* (1902).

Liberal League, a political organization founded in 1902 within the English Liberal party, but claiming for itself great liberty of speech and action. It was formed to promote the ideas set forth by Lord Rosebery in a speech at Chesterfield (Dec. 1901), in which he called for efficiency and for a 'clean slate,' particularly as regards Home Rule. The League was dissolved after Lord Rosebery declared his opposition to the budget of 1909.

Liberal Unionists. See
POLITICAL PARTIES.

Liberia. (1.) Independent negro republic on Grain Coast of W. Africa, between Sierra Leone on the w. and the French Ivory Coast on the E., extends for 350 m. between the Mano and the Kavalli, from the basins of which conventional boundaries were determined by the Anglo-Liberian and Franco-Liberian agreements of 1885, 1892, and 1907-10, fixing the limits of the hinterland as far as the gathering ground of the Upper Niger and its tributaries, an inland stretch of some 200 m. In 1911 the territory of Kanro-Lahun was transferred to Sierra Leone in exchange for a parcel of undeveloped land on the s. side of the riv. Mano. The total area has been estimated at 40,000 sq. m. The coast is deeply indented. Beyond the narrow coast region the country rises in successive terraces towards the highlands near the hinterland, where there are valuable but neglected forests of gum trees, oil palms, and other trees. The country is said to be rich in minerals (gold, coal, and diamonds), which the W. African Gold Concessions Company began to exploit in 1901. Exports are coffee, rubber, palm oil and kernels, cocoa, ivory, ginger, and raffia fibre. In 1911 an American scheme was passed by the Monrovia Congress for reorganizing the finances of Liberia, necessitating an international loan of £500,000. The chief towns are Robertsport, Monrovia (cap.), Marshall, Edina, Great Bassa (Upper Buchanan), Greenville, and Harper. The capital has a population of 8,000; while the population of the country is estimated at 2,000,000 natives (Mandingos and Krumen being the most important), Mohammedans and pagans, and

some 40,000 civilized negroes, who are Episcopalians and Presbyterians, etc. English is the official language, and British weights and measures and money are largely used. The president, vice-president, and a council of six form the executive, while legislation is in the hands of the House of Representatives and the Senate. Liberia was suggested in 1816 as a home for freed American negroes, but it was not till 1822 that an actual settlement was made. In 1847 the colony was recognized by the powers as an independent republic. See Wouverman's *Liberia* (1885); Dutry's *Libéria, sa Constitution et ses Resources* (1887); Buttikofer's *Reisebilder aus Liberia* (1890); Durhan's *The Lone Star of Liberia* (1893); and Sir Harry Johnston's *Liberia* (1906). (2.) See GUANACASTE.

Liberius, St. (352-366), pope, who, for supporting the Nicene Creed and its champion, St. Athanasius, patriarch of Egypt, was banished to Thrace (355). He was restored to his see (358), but the terms of his recall are much disputed. Some of his letters are preserved by Constant in the *Epistola Romanorum Pontificum* (1821). See Döllinger's *Papstfabeln* (1890).

Libertad. (1.) See LA LIBERTAD. (2.) Maritime dep. in N.W. Peru, S. America, lying between the Pacific on the w. and the dep. Loreto on the E., and between the deps. Lambayeque, Cajamarca, and Amazonas on the N. and Ancash on the s. Area, about 10,000 sq. m. The capital is Truxillo. Mahogany, dye-woods, sarsaparilla, hides, cattle, rice, sugar, cotton, fruits, coffee, and cocoa are produced. Gold and silver are also mined. Pop. 250,000.

Liberté, a first-class French battleship, launched 1905, displacement 14,865 tons.

Libertia, a genus of plants, mostly natives of New Zealand or Australia, family Iridaceæ. They bear white or blue flowers in loosely corymbose panicles, and have crowded linear, radicle leaves. Among the species are *L. paniculata*, *L. grandiflora*, and *L. formosa*.

Liberties, THE dist. in the s.w. of Dublin, Ireland, so called from the supposed privileges granted to its inhabitants.

Liberton, par. and vil. Midlothian, Scotland, 2 m. s.s.E. of Edinburgh. In the par. are coal mines. Pop. (1911) 8,360.

Liberty, Equality, Fraternity (Fr. *liberté, égalité, fraternité*), the motto of the French republic adopted at the time of the first revolution. By 'equality' was meant not equality of position, but equality for rich and poor in the eyes of the law.

Liberty of the Press. See PRESS, FREEDOM OF THE.

Liberum Veto. This was the power which any *nuntius* had of bringing the proceedings of the Polish Diet to a close by uttering the word *Niepozwalam* ('I forbid'). The first occasion on which this was done was in 1651, when Siccinski, a deputy from Upita in Lithuania, pronounced the fatal syllables. The germ of this custom can be traced back as far as the time of Alexander, king of Poland (1501-6). Unanimity of vote was a great feature of Slavonic assemblies. It was characteristic of the Russian *sobori* and the meeting of the *reche* at Novgorod.

Lilitina, an ancient Italian deity, goddess of the earth and its delights. She also presided over funeral rites and burial.

Libmanan, pueblo, Ambos-Camarines prov., Luzon I., Philippines, 20 m. N.W. of Caceres; has important hemp and rice industries. Pop. 17,500.

Libocedrus, a genus of evergreen coniferous trees, bearing oval, obtuse, woody cones. The hardiest species is *L. tetragona*, from Patagonia, pyramidal in habit, the spreading branches having a downward sweep. Other species are *L. chilensis*, with yellow, very fragrant wood; *L. decurrens*, a Californian tree, with columnar form; and *L. doniana* (the kawa of New Zealand).

Libonia, a genus of tropical plants, order Acanthaceæ. The best known species is *L. floribunda*, a native of Brazil, which bears numerous drooping, scarlet, tubular flowers.

Libourne, tn. and riv. port, cap. of Gironde dep., France, on the r. bk. of the Dordogne, 17 m. E.N.E. of Bordeaux. It was one of the ancient free towns founded by the English in 1269. The principal manufactures are liquors, sugar, and woollen goods. There are vineyards in the vicinity. Pop. 19,500.

Libra, an ancient constellation, and the seventh sign of the zodiac, characterized by the symbol \simeq . The Greeks called it Chela, the 'Claws' (of the Scorpion); the Romans, Jugum, the 'Yoke,' or Libra, the latter title finally prevailing through its adoption in the Julian calendar. The sign is entered by the sun about September 23; the constellation, not until October 29. Its leading star, called Kiffa Australis, the southern 'Tray' of the Scale, is of Syrian type and widely double, a_2 being of 2 $^{\circ}7$, a_1 of 5 $^{\circ}4$ magnitude. Kiffa Borealis, or β Libræ, is a greenish helium star of 2 $^{\circ}7$ magnitude. Due south of it lies the globular cluster Messier 5, known to contain 85 short-period variables. The variability from 5 $^{\circ}0$ to 6 $^{\circ}2$ magnitude of δ Libræ is due to eclipses by a dark companion revolving in 2 days 8 hours.

Libraries. The noblest library of ancient times was that of Alexandria, founded by Ptolemy Soter. More than once it was plundered or partially injured by fire, and was at last utterly destroyed by the Saracens under the Caliph Omar (642). Next to the Alexandrian library, that of Pergamos was the most conspicuous, and, according to Plutarch, contained 200,000 volumes. This library was presented by Mark Antony to Cleopatra as the nucleus for a new library at Alexandria. Another great library was that of Constantine the Great at Byzantium, which eventually numbered 120,000 volumes.

In mediæval times the possession of libraries was mainly confined to the religious orders. The library of Monte Cassino may be taken as the best of the monastic libraries, still containing 800 volumes of MSS. of the 11th and 12th centuries. The invention of printing in the 15th century did more for libraries and the perpetuation of the literary treasures of antiquity than could ever have been possible otherwise. At this time were founded the imperial libraries of Paris and Vienna, the Laurentian library at Florence, that of Frederic, duke of Urbino, that of Corvinus, king of Hungary, and the library of the Vatican; and at this period lived the patron-saint of British book-lovers, Richard Aungerville, bishop of Durham, who is the first recorded donor of books to the University of Oxford.

In Queen Elizabeth's time, the golden age of English literature, Sir Humphrey Gilbert vainly pressed upon the notice of the queen the necessity of a royal library upon an adequate scale. But the fulfilment of the enterprise was at last due to the efforts of private individuals, chief among them Clement Lit-

till, who laid the foundation stone of the library of Edinburgh University in 1580, and Sir Robert Cotton, the collector of the Cottonian manuscripts now in the British Museum.

Our great national library is an aggregation of collections obtained from time to time, and continually added to. It owes its immediate origin to the bequest of Sir Hans Sloane, whose collections were purchased by government for public use. The library has since been enriched by various additions, and by works received in terms of the Copyright Act (5 and 6 Vict. c. 45)—a privilege shared in by the Bodleian at Oxford, Cambridge University, Trinity College, Dublin, and the Advocates' Library, Edinburgh. See BRITISH MUSEUM.

Another of the great libraries of the world is the Bibliothèque Nationale in Paris, containing 3,500,000 volumes and 102,000 MSS. It is chiefly from the revolution that its progress as a modern library begins to acquire interest, notable improvements having been made in 1832 by Guizot, the historian.

A third great European library is the Imperial Library of St. Petersburg, containing 2,000,000 volumes. Peter the Great laid the foundation of the collection in 1714 by annexing the books he found in his invasion of Courland, and in 1795 the great Zaluski Library was added to it.

The principal libraries in America are the Library of Congress at Washington, now containing nearly 2,000,000 volumes, to which every publisher has to contribute two copies of each book which he issues; the Public Library of New York (the Astor, Lenox, and Tilden foundations) with its branch libraries, containing 1,837,000 volumes; and the Public Library of Boston, with 1,679,442 volumes. The last con-

tains one of the finest Shakespeare collections in the world, formed by its donor, Mr. T. P. Barton.

Of the great private libraries in England, the principal are, or have been, those of John Evelyn, the Duke of Roxburghe, William Roscoe, William Beckford, Richard Heber, Sir Mark Sykes, Lord Ellesmere (at Bridgewater House), the Duke of Devonshire (at Chatsworth), Lord Spencer (at Althorp), the Earl of Sunderland, Henry Perkins, Sir Thomas Phillipps, and Lord Ashburnham, most of which have been dispersed; and many other more modern collections, such as the Huth Library at Rutland Gate, the Christy Miller Library at Britwell, the Locker-Lampson library at Rowfant, and Lord Acton's library, bought by Mr. Andrew Carnegie and presented to Lord Morley, who in turn presented it to Cambridge University.

In recent years the special feature of the British library system has been the work done under the Public Libraries Act. (See PUBLIC LIBRARIES ACTS.) In 1877 a Library Association was founded, now numbering nearly 800, consisting of librarians and others who take an interest in library work, cataloguing, bibliography, etc. See Edwards's *Memoirs of Libraries* (1859), *Librarians and Founders of Libraries* (1865), and *Free Town Libraries* (1869); Greenwood's *Free Public Libraries* (1890); Ogle's *The Free Library* (1897); Burgoyne's *Library Construction* (2nd ed. 1905); Macfarlane's *Library Administration* (1898); J. W. Clark's *Essay on Libraries* (1901); *Transactions and Proceedings of the Library Association*; R. A. Rye's *The Libraries of London* (1910); and *The Cambridge History of English Literature*, vol. iv. ch. 19 (1909).

Librations, apparent oscillations of the lunar globe by which otherwise invisible sections of it are brought into view. They are of three kinds. (1.) Libration in latitude is an alternate dipping towards the earth of the moon's north and south poles by an angle of $6\frac{1}{2}^{\circ}$. It is due to the inclination of her axis to the plane of her orbit. (2.) Libration in longitude. If the moon's orbit were circular, the same hemisphere would always be presented to the earth; but the eccentricity of her path causing her motion to vary, we see portions of her averted face, now on the eastern, now on the western side, to a maximum extent of $7^{\circ} 45'$. (3.) Diurnal libration is an effect of our own shift of position between morning and evening. We look over the western edge of the rising moon and over the eastern edge of the setting moon by just 1° , which is the value of the moon's parallax. As the result of these inequalities, nearly six-tenths of the lunar surface come under observation. The planet Mercury also exhibits librational effects.

Libretto (Ital. for 'little book'), a name now generally applied to the words or story of a musical drama. The librettos of many operas are founded upon subjects taken from the works of Shakespeare, Scott, Goethe, Goldsmith, and others. Wagner discarded a number of these forms, and made much use of the *leit-motif* in his operas; while to give the fullest expression to his new ideas, he—after *The Flying Dutchman*—wrote all his own librettos. The most noted Italian librettists have been Metastasio, Calzabigi, and Felice Romano; French—the Abbé Perrin, Quinault, Scribe (perhaps the greatest), Barbier, Meilhac, and Halévy; German—Geibel, Goethe, Wieland, Schikaneder, and Hof-

mental; English—John Gay, Alfred Bunn, Edward Fitzball, Planché, and Gilbert.

Libreville, tn., cap. of Gabun colony, French Congo, W. Africa, at mouth of river Gabun, is an important sea-port and coaling station. Pop. (natives) 1,500, and some 200 Europeans.

Libri-Carrucci, GUGLIELMO BRUTUS ICILIUS TIMOLEON, COUNT (1803-69), Italian mathematician and bibliophile, born at Florence; became mathematical professor at the Sorbonne, Paris, member of the Institute, and director of state libraries. He was charged with appropriating MSS. from the Bibliothèque Mazarin, and sentenced (1850), while living in England, to ten years' imprisonment. Some of the MSS. were recovered and brought back by the French government in 1888. Libri-Carrucci was the author of *Histoire des Sciences Mathématiques en Italie* (1838-41).

Liburnia, dist. of Illyricum, along the coast of the Adriatic, forms part of the modern Croatia.

Libya, ancient geographical name for the continent of Africa. In Roman times the term was specifically applied to the region now known as the Libyan Desert.

Libyan Desert, region N. Africa, including parts of Egypt, Tripoli, and Barca, and lying to the w. of the Nile. It is an immense stony plateau, rising from 600 to 1,000 ft. above the Nile level in gentle terraces. A series of deep depressions contains the famous oases Khargeh, Dakhel, Farafrah, Baharieh, and Siwah. Westward the desert merges into the Sahara.

Licata, or ALICATA, seapt. tn., prov. Girgenti, Sicily, at mouth of river Salso, 24 m. s.e. of Girgenti. The principal export is sulphur (in 1909, 121,681 metric tons). The harbour is one of the best in Sicily. Pop. 22,000.

Lice are small insects belonging to the family Pediculidae, of the order Hemiptera. The integument is very thin, wings are entirely absent, the thoracic segments are indistinctly separated, and the feet end in a single long claw. The head bears a short tube furnished with hooks, and from this a suctorial tube can be protruded, by means of which the insects suck the blood upon which they feed. They are parasitic on the bodies of mammalia, clinging to the hairs by the hooked feet, and are apparently very prolific. Some forty species, belonging to six genera, are known.

Licence and the Licensing Laws. A licence is an authorization to do some act which would otherwise be an infringement of the rights of another—e.g. a licence to cross another man's land. This is not an easement, and gives no right of property. Even an exclusive licence—e.g. the sole right of letting boats for hire upon a lake—creates no right of property which could be maintained against third parties; but, of course, if it is granted for valuable consideration and is infringed, the grantor of the licence will be liable to an action for damages.

Many things cannot be legally done without a licence from the proper authority. For fiscal purposes excise licences are required in a great many cases. Licences are required by appraisers, auctioneers, house agents, hawkers, pawnbrokers, dealers in plate, makers and vendors of playing cards and patent medicines, dealers in and retailers of tobacco; also for keeping dogs, horses, carriages, light locomotives, and men servants; to carry a gun, to kill game, and to use armorial bearings. Dealers in game require both an excise licence and a licence from the justices.

What are commonly called the

Licensing Laws are the acts regulating the sale of intoxicating liquors. It is not possible to do more here than refer to the main provisions of the acts.

No intoxicating liquors can be sold without an excise licence. Wholesale dealers require only an excise licence. Retailers require both an excise licence and a certificate or licence from the justices, and the former will not be granted except on production of the latter. An exception is made in the case of retail licences for consumption off the premises, taken out by wholesale wine and spirit dealers.

The excise licences granted to retailers differ according to the drink to be sold, the kind of business carried on by the vendor, and the place where the drink is to be consumed—*i.e.* *on* or *off* the licensed premises. An *on* licence authorizes consumption either *on* or *off*.

In counties the licensing authorities are the justices of each petty sessional division. They hold special sessions annually, within the first fourteen days of February, called the General Annual Licensing Meeting, or 'brewster sessions,' and an adjournment of the meeting within one month. In boroughs, if there are less than ten justices, they are the licensing authority acting as a body; if there are more than ten justices, they appoint a committee of not less than three or more than seven, or in county boroughs of whatever number they may determine, not being less than seven. (Act of 1904.)

The licensing authorities hear applications for new licences, and may refuse them in their absolute discretion, and without appeal. If they think fit they may grant new licences, provided the applicant is a fit person and the premises are structurally adapted for the intended busi-

ness, and of a certain annual value. New *on* licences may be granted for any period up to seven years, and must be subject to such conditions as will secure to the public the monopoly value of the licence. Justices may attach other conditions to the grant.

New licences require confirmation; and persons who have objected to the grant of a new licence, and they only, may object to its confirmation. The confirming authority is, in counties, the committee appointed by the justices in quarter sessions, in accordance with rules approved by a secretary of state; in boroughs, if there are more than ten justices, the whole body of the justices, and if there are less than ten, a joint committee of county and borough justices.

Renewals.—In the case of annual licences, applications for renewal must be made to the licensing authority every year. If they decide to renew, there is no appeal by objectors. As to refusals to renew, the following provisions apply:—In the case of *off* licences, persons who held such licences for wines, spirits, liqueurs, sweets, or cider, on June 25, 1902, cannot be refused except on grounds connected with the character of the applicant, of the premises, or of adjoining premises owned by the applicant. In the case of *on* licences, the powers of the licensing authorities have been altered by the Act of 1904, and they can only refuse to renew an *on* licence on the following grounds:—(1) That the premises have been ill-conducted; (2) that they are structurally deficient or unsuitable; (3) that the character or fitness of the proposed holder of the licence is unsatisfactory; or (4) that the renewal would be void. In all other cases when the licensing justices do not approve of a renewal being

granted they must make a report to the committee of quarter sessions in counties and boroughs other than county boroughs, and to the whole body of justices in county boroughs. (The city of London is for this purpose to be treated as a county borough.) The report is considered, and if a renewal is refused, compensation under the act must be paid. The compensation is provided by the trade, and is paid out of a fund, contributions to which are levied on the licensed premises in the county, or other area created by the justices in quarter sessions, and in the county borough, at a rate fixed, within limits laid down by the Act of 1904, by the quarter sessions of counties and the whole body of justices of county boroughs. Beerhouses which were licensed before 1869 are entitled to rather better treatment than others; and justices can, without compensation, refuse to renew licences granted for the first time since 1904.

Provisional Licences.—Application may be made for the provisional grant and confirmation of an *on* licence for premises in course of erection or about to be erected. Plans must be submitted and approved, and, when the premises are complete, the licensing authority, if satisfied that the plans have been adhered to, may declare both the provisional grant and confirmation to be final.

Transfer of Licences.—At the general annual licensing meeting, and at special sessions held from four to eight times a year, application may be made for the transfer of licences. The holder may desire to transfer premises to another tenant, or a transfer be required on account of the death, sickness, or bankruptcy of the holder, or because of premises being pulled down for public purposes or becoming

unfit for use by reason of fire or some other cause.

Six-day and early closing licences may be granted at the request of the applicant. The premises must be closed on Sundays, and one hour before the regulation time on week days, and the holder is entitled to remission of one-seventh of the excise duty.

Occasional licences are granted by the commissioners of police in the metropolitan police district, and by two justices elsewhere, for the convenience of the public attending cricket matches, races, etc. They authorize a licensed person, for a period not exceeding three consecutive days, to sell liquor between sunrise and 10 p.m. in some other place than his licensed premises.

By the Act of 1902 all clubs in which intoxicating liquors are supplied to members or their guests are required to be registered, and stringent regulations are enacted for the prevention of abuses.

The duties payable on all licences were considerably increased by the Finance (1909-10) Act, 1910. Spirit distillers pay £10 for the first 50,000 gallons and for every further 25,000 gallons of spirits distilled per annum. Publicans pay half the annual value of their premises, with a minimum which varies according to the population of the locality, and in London is £35. The details of the various licences are complicated, and reference should be made to the provisions of the act itself.

The law with regard to Scotland was consolidated with amendments by the Licensing (Scotland) Act, 1903. For the most part the law is the same as in England, with the exclusion of the special provisions of the English Act of 1904, but the constitution both of the licensing and appeal courts is changed. For each burgh

being a county of a city, and for each royal, parliamentary, or police burgh with a population of 7,000, and for each burgh with a population under 7,000 but of or exceeding 4,000, the magistrates of which had under the existing acts power to grant certificates, a separate licensing court is established consisting of all the magistrates of the burgh. Appeal courts, for hearing appeals and applications for confirmation of new licences, are constituted under section 4, and the second schedule of the act for burghs which are counties of cities; for royal, parliamentary, or police burghs with a population of 20,000; for all royal, parliamentary, and police burghs in one county having a population exceeding 7,000 and under 20,000. Appeal courts for counties, or the licensing districts of a county, are also constituted in accordance with section 4 (3) and the third schedule of the act, consisting of equal numbers of justices and county councillors.

In Ireland the law of licensing is contained in separate acts for the most part, though the important English Act of 1872 applies to Ireland. The law, however, is largely the same, with the exclusion of the provisions of the English Act of 1904. The Licensing (Ireland) Act, 1902, provides that until after 1907 no licence shall be granted for the sale of intoxicating liquors, whether for consumption on or off the premises, except (1) by way of renewal, (2) for a hotel, or (3) for a railway refreshment room. See Paterson's *Licensing Acts, 1828-1904* (19th ed. 1908); and for Scotland, Dodd's and Macpherson's *Licensing Guide* (1903).

Lichen (Gr. *leichen*, 'canker') is described by some as a papular form of eczema, by others as a distinct disease. It is characterized by the eruption of numerous

small red spots which are slightly elevated above the skin, and it may be either localized or widely distributed over the whole body. Soothing lotions or powders usually cure it very rapidly. A more chronic and intractable form, however, is known as *lichen ruber*, which occurs in older people. In this variety the papules coalesce to form patches of uniform induration. In treatment, arsenic has been found of most service; but local applications, such as ointments of tar and zinc, are also useful.

Lichenin, or Moss STARCH, occurs in many lichens, notably Iceland moss, from which it may be extracted by boiling water as a gelatinous solution. It is used as a food in invalid cookery.

Lichens are the familiar vegetable growths clothing the stems and branches of trees with their shaggy fronds, or forming brilliantly coloured patches on roofs, walls, and even on rock-surfaces near the seashore. Some are of commercial value; litmus and orseille are obtained from species of the genus *Roccella*; the so-called Iceland moss (*Cetraria islandica*) is used as a demulcent. The Laplanders feed their reindeer in the winter on *Cladonia rangiferina*, and the Tartars make 'earth-bread' from an encrusting form which grows on rocks in the steppes. Up to about forty years ago lichens were considered to be independent plants of imperfect organization, forming a division of cryptogams with the Fungi and the Algae, and were believed to derive their nourishment from the medium in which they grew—i.e. from the atmosphere. In 1866 De Bary suggested that they were to be classed as a division of Fungi—that is to say, what had been generally regarded as an 'independent organism really consisted of two

plants, a fungus and an alga, associated for the benefit of both. This suggestion of De Bary's was worked out by Schwenderer, who gave it to the world as the 'dual hypothesis.' The truth of this hypothesis may be said to have been demonstrated by the investigations of Reess, Stahl, and Bornet, who have shown that it is possible to separate the two members of the partnership, by breaking up the lichen into fungus and alga, and to combine the two elements so as to form the compound growth. Thus a lichen may be defined as a symbiotic organism, consisting of one of the higher Fungi and a single-celled or thread-like alga, intimately connected, and with a compound thallus, technically called a *consortium*. The green plant absorbs from the air carbon dioxide, which under the influence of light is broken up, and the resulting starch grains are incorporated by the threads of the mycelium of the enclosing fungus, which in turn supplies the algal cells with water. The function of the algal partner is vegetative, the apothecia or fructifications being produced by the fungus. Theoretically lichens should be referred to the groups to which the respective partners belong; but in practice it has been found more convenient to treat them as a separate class, with two subclasses (*Ascolichenes* and *Hymenolichenes*) according to the systematic position of their constituent fungi. In the first subclass these are all ascomycetous, producing spores in little transparent sacs; in the second subclass, with but a single genus (*Cora*, which is tropical), the fungus is a basidiomycete, in which the spores are developed on a club-like support.

Lichfield, munic. bor., co. in itself, and city, in Staffordshire, England, 16 m. s.e. of Stafford.

The cathedral, commenced in the 12th century and completed in the 15th, is one of the most beautiful in England. Dr. Samuel Johnson was a native. Brewing is carried on. Pop. (1911) 8,617.

Lichtenberg. (1.) Suburb of Berlin. Pop. (1910) 81,101. (2.) A former principality of Germany, now forming the circle of St. Wendel, Rhenish Prussia. Area, 220 sq. m.

Lichtenberg, GEORGE CHRISTOPH (1742-99), German philosopher and satirist, born at Oberramstadt, near Darmstadt; was appointed professor at Göttingen (1769). He was distinguished for his philosophical essays, but still more for his witty burlesques of the inflated style of Lavater and others. His *Gesammlte Schriften* appeared in 14 vols. (1844-53), *Briefe* in 1901, and *Aphorismen* in 1902. See Grisebach's *Gedanken und Maximen aus Lichtenberg's Schriften*, with Life (1871), and a monograph by Schäffer (1899).

Lichtenburg, tn., cap. Lichtenburg dist., Transvaal prov., S. Africa, 110 m. w. of Johannesburg. Pop. 2,100.

Lichtenstein, tn., Zwickau, Saxony, Germany, on Rödlitz R., a tributary of the Mulde, 14 m. w.s.w. of Chemnitz. Pop. (1910) 7,880.

Lichterfelde. See **GROSS-LICHTERFELDE**.

Lichtervelde, tn., Belgium, in West Flanders, 14 m. s.s.w. of Bruges. Pop. 6,700.

Licinius, GAIUS LICINIUS CALVUS, surnamed 'Stolo,' the Roman statesman who practically ended the long struggle between the patricians and plebeians. He was consul in 364 and in 361 B.C.

Licinius, whose full name was **PUBLIUS FLAVIUS GALERIUS VALERIUS LICINIANUS LICINIUS**, was emperor of Rome (307-324 A.D.).



Types of Lichens.

1. *Roccella tinctoria*: a, natural size; b, portion magnified. 2. *Cladonia rangiferina*: a, natural size; b, portion magnified. 3. *Cora pavonia*: a, natural size; b, portion magnified. 4. *Physcia parietina*: a, natural size; b, portion magnified. 5. *Cladonia pyxidata*, natural size. 6. Microscopic details of a lichen, transverse section: f, fungoid portion; al, algal portion; fr, fruit.

In 313 he conquered Maximinus, and secured undisputed sway over the Eastern empire. He was soon engaged in war with Constantine —first in 315, when he lost the provinces of Greece, Macedonia, and most of the lower valley of the Danube; then again, after a peace, in 323, when two great defeats at Adrianople and Chalcedon placed him at the mercy of Constantine, who put him to death.

Licking River, Kentucky, U.S.A., a l. bk. trib. of the Ohio. It rises in the E. part of the state, and flows N.W. to its junction with the Ohio at Cincinnati. Length about 220 m.

Lick Observatory, an astronomical establishment founded by James Lick of San Francisco (1796-1876) at a cost of £140,000. He chose a site on the summit of Mt. Hamilton, at an altitude of 4,280 ft., and enjoined by will the erection there of the most powerful telescope in the world. The instrument is a 36-inch refractor by Alvan Clark, and had no rival for a number of years. The body of James Lick lies beneath the dome.

Licodia Eubea, tn., Sicily, prov. of and 32 m. s.e. of Catania. Pop. 7,000.

Lictors, the attendants of the magistrates in ancient Rome, their duties being to escort them, to demand due respect for them from passers-by, to execute their orders, and, in particular, to inflict punishments. They carried axes tied up in bundles of rods, called *fascæ*, as emblems of their office.

Licuala, a genus of dwarf tropical palms, with terminal, fan-shaped leaves and prickly stalks. Among the species are *L. grandis*, a native of New Britain; *L. Rumphii*, from Borneo; *L. elegans*, from Sumatra; and *L. horrida*, from the Indian archipelago.

Lida, tn., Vilna gov. W. Russia, on the Lida, 50 m. s. of Vilna city, cap. of dist. Pop. 9,000 (half Jews).

Liddell, Henry George (1811-98), English classical scholar, was headmaster of Westminster school (1846-55), dean of Christ-church, Oxford (1855-91), and vice-chancellor (1870-4). He is best known as the author, with Dean Scott, of the standard *Greek Lexicon* (1843; 8th ed. 1897). He also wrote a *History of Rome* (1855).

Liddesdale, dist. of Roxburghshire and Dumfriesshire, Scotland, comprising the area drained by the river Liddel and its tributaries. It is the country of the Armstrongs and Elliots. Hermitage Castle, associated with Bothwell and Mary Queen of Scots, is in the district.

Liddon, Henry Parry (1829-90), English divine, who, as vice-principal of Cuddesdon College (1854), vice-principal of St. Edmund's Hall, Oxford (1859), Ireland professor of exegesis (1870), and canon of St. Paul's (1872-90), impressed his personality on the age. The intimate friend of Pusey, he lived in close sympathy with the Oxford movement; but he considered that the action of the extreme ritualists imperilled its progress. In 1882 he resigned his professorship, and later he travelled in Egypt and Palestine, and visited Döllinger at Munich. He wrote *A Life of E. B. Pusey*, completed by Johnston and Wilson (1893-7). See Russell's *H. P. Liddon* (1903), J. O. Johnston's *Life and Letters of H. P. Liddon* (1904), and Donaldson's *H. P. Liddon* (1905).

Lidford. See LYDFORD.

Lidford Law, an old English proverbial expression, meaning to hang a man first and try him afterwards. It is said to have arisen from the extremely summary procedure of a court held

in the town of Lidford in Devonshire. The proverb ran,—

'First hang and draw,
Then hear the cause by Lidford law.'

See also HALIFAX LAW.

Lidingsö, isl., Sweden, 2 m. E. of Stockholm; a holiday resort.

Lidköping, tn., Sweden, in gov. of Skaraborg, 68 m. N.W. of Gottenborg, at s. end of Lake Wener. Pop. 5,500.

Lido, chain of sandy islets, Italy, between rivers Brenta and Piave, and separating the lagoons of Venice from the Adriatic Sea. Since 1894 the chief sea entrance to Venice has been by the Lido channel.

Lie, JONAS LAURITS IDEMIL (1833-1908), Norwegian novelist, born at Ecker, near Drammen. He first became popular when he published a volume of poems (1866); but his real domain was the novel. Beginning with *Den Fremesynte* (1870), he followed this up with a whole series of excellent romances, which include *Tremasteren Fremtiden* (1873; Eng. trans. *The Barque 'Future'*, 1879); *Lodsen og hans Hustru* (1874; Eng. trans. *The Pilot and his Wife*, 1879); *Rutland* (1880); *Gaa paa* (1880); *Familjen paa Gilje* (1883); *Livsslaven* (1883; Eng. trans. *One of Life's Slaves*, 1895), one of his most powerful stories; *Kommandørens Döttre* (1886; Eng. trans. 1892); *Onde Magter* (1890); *Dyre Rein* (1896); *Faste Forland* (1899); *De Ulfinger* (1904), and numerous others. Lie's novels are realistic, his psychology is keen and delicate, his characterization is vivid and convincing, and his tone is always noble, even when pessimistic. He also wrote a few plays, as *Grabous Kat* (1880). See *Life*, by Arne Garborg (1893).

Lie, MARIUS SOPHUS (1842-99), Norwegian mathematician and linguist, born at Nordfjord. The chair of mathematics at Christi-

ania was founded for him (1872); there he remained till appointed professor of geometry at Leipzig (1886). He published *Theorie der Transformationsgruppen* (1888-93), and *Vorlesungen über Differentialgleichungen mit bekannten Infinitesimalen Transformationen* (1891).

Lieben, or **ALTLIEBEN**, tn., Bohemia, Austria, on the riv. Moldau, N.E. suburb of Prague. Manufactures chemicals, machinery, and beer. Pop. (1911) 27,034.

Liebermann, MAX (1847), German painter, born in Berlin. He went to Barbizon (1875), and came under the influence of Courbet, Millet, Corot, and Daubigny, the result being seen in such paintings as *Labourers in a Turnip Field*. One of his best pictures is *The Flax Spinners*, in the Berlin National Gallery. He has written monographs on *Degas* (1899) and *Joseph Israëls* (ed. 1902). See *Lives*, in German, by Kämmerer (1893), Graul (1893), and Rosenhagen (1900).

Liebig, JUSTUS FREIHERR VON (1803-73), German chemist, was born at Darmstadt, and after a not very successful school career, was apprenticed to an apothecary, previous to entering the University of Bonn, and later Erlangen. After taking his degree (1822) he went to Paris, and worked with Gay-Lussac until appointed professor of chemistry in Giessen (1824). In 1852 he was called to Munich, where he remained till his death. Liebig's work was principally on, though not confined to, organic chemistry; he discovered chloral (1831) and chloroform (1832). He investigated also the chemistry of the life processes of animals and plants, and in this connection did good service in elucidating the chemical actions occurring in agriculture and cooking, and in inventing the extract of meat with which his name was con-

nected. It is as a teacher, however, that Liebig is perhaps most famous, founding much of that which is best in modern experimental methods of teaching chemistry, and stimulating by his inspiring influence and individual instruction a host of pupils who afterwards spread his clear and logical doctrines over the world. Besides his numerous monographs on scientific subjects, Liebig wrote *Die Chemie in ihrer Anwendung auf Agrikultur und Physiologie* (1840), *Die Naturgesetze des Feldbaues* (1842), and *Chemische Briefe* (1844); took a part in the production of a dictionary of chemistry; founded the *Annalen der Chemie und Pharmazie* (1832); and edited the *Jahresbericht der Chemie*. See Hofmann's *The Lifework of Liebig* (1876), and Shenstone's *Justus von Liebig* (1895).

Liebknecht, WILHELM (1826-1900), German socialist agitator and journalist, born at Giessen. Imprisoned for his share in the Baden rebellion, he escaped in 1849 to England. Amnestied in 1862, he entered the N. German Parliament (1867). He founded, with Herr Bebel, the *Demokratisches Wochenblatt*; which led to the imprisonment of both (1872-4). On his release Liebknecht entered the Reichstag, of which he continued a member, with short interruptions, for twenty-five years. From 1890-1900 he edited the socialist organ *Vorwärts*, and was the author of *Zur Grund- und Bodenfrage* (1876), *Geschichte der Französischen Revolution* (1890), *Robert Owen* (1892), and other works. There is a *Life*, in German, by Eisner (1900).

Liebrecht, FELIX (1812-90), German folklorist and linguist, born at Namslau. From 1849 to 1867 he was professor of German at Liège. His collection of monographs on folklore, *Zur*

Volkskunde (1879), is a classic. His works also include translations of Basile's *Pentamerone*, with a preface by Jakob Grimm (1846); *Barlaam und Josaphat* of Johannes Damascenus (1847); and the *Otia Imperialia* of Ger-vase of Tilbury (1856).

Liechtenstein, PRINCIPALITY OF, small independent state bounded on the N. and E. by the prov. of Vorarlberg, Austria, on the w. by the Rhine, and on the s. by the Swiss cantons of Grisons and St. Gall. It is extremely mountainous, being traversed N. and S. by the Rhaetian Alps. The people are largely engaged in agriculture—corn, vines, flax, and fruit being cultivated. The chief town is Vaduz. Since 1866 it has belonged to the Austrian Customs Union. The inhabitants pay no taxes, nor are they liable for military service. Area, 65 sq. m. Pop. 10,000.

Liège. (1.) Province of E. Belgium, on both sides of the Meuse, and diversified by outliers of the Ardennes (2,200 ft.). The s. of the province yields coal, iron, marble, lead, and zinc. Industries include the working of iron and steel, the making of machinery, cutlery, weapons, woollens, cloth, cottons, and glass. Area, 1,117 sq. m. Pop. 85,000. (2.) (Flem. *Luik*; Ger. *Lüttich*), tn. and episc. see of Belgium, cap. of above prov., on the Meuse, 50 m. E. by s. of Brussels. The industries include the manufacture of machinery, tools, bicycles, railway material, firearms, cannon, linen, woollens, leather, zinc goods, sugar, beer, and spirits. The city is famous for its university, attended by 1,670 students in 1909. It fell before Marlborough in 1702. Pop. 172,000; with suburbs, 220,000.

Liegnitz, tn., Silesia, Prussia, at confluence of the Schwarzwasser and Katzbach, 40 m. W.N.W. of Breslau. Manufactures cloth,

machinery, pianos, shoes, tobacco, oil, woollens, and pottery. The town dates from the 11th century. Pop. (1910) 66,563.

Lien. A lien may be *particular* or *general*. A particular lien is a right which one person has to retain the property of another until a debt due in respect of that property has been satisfied. A general lien, again, is the right to retain property of another until a general balance of account has been liquidated. When once possession is parted with, the lien, as a rule, is gone. On the other hand, a lien continues although the debt itself has become statute-barred. The holder of a lien has no right to sell it; see INNKEEPER. A vendor's lien attaches when the purchase-money has not been wholly paid. As to goods, it is regulated by the Sale of Goods Act, 1893; and as to land, it amounts to a mortgage on the property, and is good against a purchaser with notice.

Lierre, or LIER, tn., Belgium, prov. of Antwerp, 9 m. S.E. of Antwerp; manufactures silks, boots and shoes, cutlery, lace, and sugar. Pop. 24,000.

Liesing, s.w. suburb of Vienna, Austria; chemical and textile manufactures. Pop. (1911) 8,809.

Liestal, cap. of Basel-Land, Switzerland, on the Ergolz, 8 m. S.E. of Basel; manufactures gloves and ribbons. Pop. (1910) 5,932.

Lieutenancy, COMMISSION OF.
See LONDON—Government.

Lieutenant and Second-Lieutenant. Officers of the ranks of lieutenant and second-lieutenant are, in the British army, collectively denominated 'subaltern officers' or 'subalterns.' Their duties in the field are to command the troops of a squadron in the cavalry (see SQUADRON), half-companies in the infantry, and sections of two guns and four wagons in the field artillery batteries. In camp or

quarters they also command these bodies and attend to their interior economy, under the orders of their respective captains. There is no difference between the duties of a lieutenant and those of a second-lieutenant. See *The King's Regulations for the Army*.

Lieutenant and Sub-lieutenant, in the navy. After a satisfactory examination in gunnery, navigation, pilotage, seamanship, engineering, and torpedo practice, a midshipman who has completed the prescribed service is promoted to be a sub-lieutenant. Sub-lieutenants are eligible for promotion to lieutenants after two years' service, including one year's watch-keeping. A lieutenant may be promoted to the rank of commander for distinguished service, or on completing four years' service as lieutenant.

On attaining the rank of lieutenant, officers either become 'general service' officers or specialize in one of the following branches:—Navigation, torpedo, gunnery, engineering, or marines. A lieutenant in the navy ranks with a captain in the army, and, after eight years' service, with a major. See *The King's Regulations for the Navy*.

Lievin, tn., dep. Pas-de-Calais, France, on Souchez R. and Lens Canal, 9 m. N. of Arras; has important coal mines. Pop. 22,000.

Life. See BIOLOGY; also ESTATES, ASSURANCE, LIFE, and PRESUMPTIONS.

Lifeboats, boats primarily designed for saving life at sea. The institution of the lifeboat system was due to the initiative of a few private individuals. The subscribers to the newsroom at the Law House, S. Shields, suggested the construction of boats for the purpose, when, in 1789, the ship *Adventure* of Newcastle was stranded on the Herd

Sands at that place. The men of S. Shields called a meeting, and offered sums of money for the best plan of a boat for the special purpose of life-saving. Henry Greathead's design was chosen, and the principles on which he constructed his boat have been adhered to with little alteration up to the present day. If a spheroid be divided into quarters, it will be found that each portion cannot be upset in the water, or rather, cannot remain bottom upwards. Greathead took advantage of this fact, and one of the most noticeable features of the first lifeboat was that it had high projecting ends. Thanks largely to the energy of Sir William Hillary, the Royal National Lifeboat Institution was founded in 1824. Depending chiefly on private support, the institution did not establish itself on a sound basis until 1850.

The most essential qualities of a lifeboat are buoyancy, stability, self-righting power, self-emptying ability, capacity for carrying passengers, speed against a heavy sea, and facility in launching and in taking the shore. Buoyancy is given by a water-tight deck or floor, air-cases round the sides on board, and two large air-chambers, one forward and the other aft. The air-cases round the sides serve the purpose of keeping to the middle of the boat any water that is shipped—a very important consideration. Stability is given by a heavy keel of iron weighing about nine hundredweight for a thirty-three feet boat. The self-righting qualities are attained chiefly by the large elevated air-chambers in bow and stern, and by the tendency of the ballast and heavy keel to right the boat directly she capsizes. The self-emptying qualities depend upon the floor of the boat being two or three inches above the water-line,

and being fitted with large holes to let the water out through the bottom. At the upper end of these holes are valves that open downwards, thus letting water out without letting it in. The strength of a lifeboat is due to its peculiar material and construction. The best Honduras mahogany is used, and diagonal planking is adopted. The planks pass right round from gunwale to gunwale, and have a layer of prepared canvas between them.

Each boat has a set of spare oars, and is six, eight, ten, or twelve oared, and usually carries a mast and sail. Motor and steam-driven lifeboats have been used with success, and in the future their number will probably be much increased (see MOTOR BOATS). The average cost of equipping a lifeboat station is £1,000, and about £70 a year is further needed for upkeep and wages. In 1909 the lives saved by lifeboats round the British coasts numbered 434. See BOAT; also Dibdin and Aylings' *The Book of the Lifeboat* (1894).

Life Guards, the premier corps of the British army, whose special duty it is to attend the sovereign. They differ from other cavalry regiments in being equipped with the cuirass. Each regiment carries four standards. The Life Guards trace their formation back to the two troops of royalist gentlemen who followed Charles II. into exile. Their battle honours are as follows:—Dettingen, Peninsula, Waterloo, Tel-el-Kebir, South Africa (1899–1900), Relief of Kimberley, and Paardeberg.

Liferent, in Scots law, the right to enjoy property during life without wasting the substance. In the case of heritable subjects the liferent has possession, and is entitled to take all the fruits—i.e. the whole annual value—but he must not cut timber or work minerals.

He is liable for all taxes and other burdens, and must keep the subjects in proper repair. A liferenter of a sum of money entitles the liferenter to the interest upon it, and gives him certain powers of investing the capital upon giving security to the firer. The liferenter of furniture is not responsible for ordinary tear and wear.

Life-saving Apparatus. By the Merchant Shipping (Life-saving Appliances) Act, 1888 (the result of the report by a Select Committee on Saving Life at Sea, 1887), a committee was appointed to frame rules with regard to the life-saving apparatus to be carried by British steam and sailing vessels. Particular attention was paid by the committee to the quantity and quality of these appliances for emigrant ships, and for this class and other classes different rules were drawn up as to the number of boats, life-boats, life-belts, life-rafts, and other appliances to be carried by each class. The Act of 1888 is repealed and its provisions re-enacted by the Merchant Shipping Act, 1894.

The principal instrument in saving life at sea is the life-belt, one of the best being that invented for the National Lifeboat Institution by Commander J. R. Ward in 1854.

With the lifeboat the *rocket apparatus* forms the principal means of saving life on the coasts of the United Kingdom and America. This, unlike the lifeboats, is the exclusive property of the Board of Trade. We owe the rocket apparatus to John Dennett of Newport, Isle of Wight. In 1853 there were a hundred and twenty stations in the United Kingdom supplied with his apparatus, which is worked in the following manner:—A rocket is fired, which carries a line over the ship; the

crew haul in the rocket line, and this brings an endless rope (called a whip), rove through a block with a tail attached to it, which they make fast to a mast or some other portion of the wreck high above the water. Those on shore then haul off to the ship a hawser attached to the whip, which is fastened to the mast or other portion of the wreck. The sling life-buoy is next sent to the vessel, and is hauled back with an occupant. This process is repeated till all, or as many as possible, are saved.

During the year ending June 30, 1903, 112 lives were saved by the rocket apparatus, making a total of 9,156 saved since 1870. There are 243 life-saving stations on the British coasts, with 3,898 volunteers. See *Instructions relating to the Rocket Apparatus for Saving Life from Shipwreck* (1904), issued by the Board of Trade.

Liffey, riv., Leinster, Ireland, rises in the Wicklow Mts., 12 m. s.w. of Dublin, and after a course of 50 m. flows into Dublin Bay.

Lifts. The term 'lifts' is usually applied to those contrivances for mechanically raising passengers, or such bulky loads as freight wagons, from one floor of a building to those above—the most common examples being the lifts or elevators in modern high hotel or office buildings. The motive power for these is now either hydraulic or electric. The use of steam-power is practically restricted to lifting from coal mines and other deep-level shafts; while gas-engines are only employed for small lifts in isolated situations where no installation of electricity or water-under-pressure is available.

Hydraulic Lifts. See HYDRAULIC MACHINERY.

Electric Lifts.—In electric lifts, the cage is suspended by ropes passing round pulleys at the top

of the shaft, and wound by a grooved drum driven by the motor. An essential quality of any motor is that of high speed, so that some system of gearing is necessary to transmit power to the winding-drum. Worm-gearing is now almost universally adopted. The worm-spindle, which is usually driven direct by the motor, runs in collar or ball bearings which take the lateral thrust. The worm or screw is of quick pitch, and turns in an oil-bath, together with the worm-wheel, with which it engages, and which is keyed to the shaft of the rope-drum. In the Sprague lifts adopted for the Central London Ry. stations, two worms, right and left handed, are fixed on each spindle, and gear with two worm-wheels, so that lateral thrust on the bearings is avoided. The motors for these, at 470 revolutions a minute, give a lift speed of 200 feet a minute.

Starting and Stopping Gear.—Some regulating gear is required for starting electric lifts, as, when switched on from a standstill, the current available is that due to the full electro-motive force of supply—nearly twenty times as great as the working current, which is that resulting from the difference between the electro-motive force of supply and the back electro-motive force of motor. To prevent the dangerous jerk which would thus be caused, it is usual to insert resistance in the motor circuit, and to provide a switch which (generally automatically) gradually cuts out this resistance as the current falls to the proper limit.

An automatic magnetic brake is usually provided, so that the cage is stopped when the circuit is purposely or accidentally broken, and released when the current is switched on again.

Safety Appliances.—In all forms of suspended lifts, whether worked

by hydraulic power, steam, gas, or electricity, it is essential that some device should be employed by which the cage may be stopped with absolute certainty in the event of a breakage of the suspending ropes; and in most modern lifts two or more separate systems are provided, so that the failure of one might not involve a disastrous accident. The means most commonly employed include some form of safety catches, which are released by any break in the tension of the ropes, and grip the guide-rails with a force sufficient to bring the cage at once to rest. Another system includes a centrifugal governor, which allows the safety clutches to come into action when the speed of the cage passes a certain limit.

In addition to one or more of these devices, all modern lifts are fitted with safety buffers, which help to neutralize the dangerous force of even the most direct fall of the cage.

Mine Lifts.—Lifts in the shafts of mines differ from other forms of lifts in their extreme height (up to 5,000 ft.) and in the speed with which the cage has to be drawn up. Steam is invariably used as a motive power, the cage being drawn up by a steel wire rope passing over the headgear and wound on a drum. The chief difficulty is to secure uniformity in the demands on the engine, owing to the great weight (compared with the useful load) of the moving parts, particularly that of the winding-rope. To counterbalance the variations due to the rapidly-changing suspended length of the latter, it is usual to have a balance or tail rope fastened to the cage and passing round a pulley at the shaft bottom. The adoption of a spiral winding-drum of varying radius (generally of a conical form) answers the same purpose, but

adds to the weight, and consequently to the friction and inertia of the moving parts.

Moving Stairways.—Where economy of space and of time are not primary objects, vertical lifts may in some cases be replaced by travelling stairways or inclined planes, which carry passengers upwards with a continuous though somewhat slow movement. They were first introduced in the Paris exhibition of 1900. Though of various makers and patents, the principle in all is much the same. An endless belt, from 20 in. to 23 in. wide, was stretched over two pulleys, above and below, and was carried on intermediate friction-rollers so as to obviate any tendency to sag. Hand-rails were provided on each side, travelling at the same rate as the main belt—a speed of about 2 ft. a second. Electric motors were used as the driving power, the requisite reduction of speed being obtained by the use of belts, worm-wheels, and spur-gearing in the different patterns of way. The cost of working was found to be less than that of vertical electric lifts for heights of two or three stories, but more for lofty distances.

Ligaments, tough fibrous bands which connect together the articular extremities of bones. They are chiefly composed of white fibrous tissue arranged in bundles which interlace or lie parallel with each other, and they have a white, shining, silvery aspect. Some ligaments consist entirely of yellow elastic tissue whose elasticity allows of its acting as a substitute for muscle.

Ligan, or LAGAN. See FLOT-NAM.

Ligao, pueb., prov. Albay, Luzon, Philippines, 22 m. N. by w. of Albay; produces sugar-cane, hemp, and indigo. Pop. 18,000.

Ligature, in surgery, is a thread or wire used for the purpose of

occluding the circulation in a diseased or injured blood-vessel, or of preventing haemorrhage or discharge from the pedicle of a tumour which has been removed. Various substances are employed as ligatures. In occluding a blood-vessel it is desirable that a material be employed which is capable of absorption after it has kept the vessel closed sufficiently long for the formation of a blood clot which permanently seals the opening. Catgut and fine silk are the ligatures in most common use, but kangaroo tendon and other animal substances are sometimes employed for special reasons. When early absorption of the ligature is impossible or undesirable, a material such as silver wire should be used, which is readily encapsulated by animal tissues, and which is unlikely to cause mechanical irritation. In all cases the ligature must be aseptic, as otherwise it may lead to serious mischief. An external ligature in the form of a tourniquet or an elastic band is frequently applied to a limb to control haemorrhage either after an injury or during an operation. Such a ligature must, of course, be situated between the site of the wound and the heart.

Light is, primarily and subjectively, any effect on our sense of sight; secondarily and objectively, it is the changing condition in the external world which corresponds to or produces this sensation. The earliest scientific view of the nature of light was that it was a material emanation radiating from the luminous body in straight lines so long as the medium through which it passed remained the same. Now, however, it is recognized that light is a particular kind of motion in a medium believed to fill all space and permeate all matter. (See *ÆTHER*.) The motion is a wave motion, and is propagated

through free space with a speed of 186,000 m. per second.

The changes which may occur in the character of a ray of light which falls upon a material surface or passes into or through a portion of matter are infinitely various. The direction of the ray is in general changed (see REFLEXION AND REFRACTION), and the changes are different for the rays of different colour. (See DISPERSION and SPECTRUM.) Usually absorption takes place of a selective character, so that certain constituents of the original ray are more absorbed than others, giving rise to all the variety of colour present in nature. (See COLOUR.) If the matter is transparent, the absorption is never complete; the ray emerges deprived of some of its original energy. Most of this absorbed energy takes the form of heat; but under certain conditions it is thrown off again as a ray of a colour quite different from that of the ray which has been absorbed. (See FLUORESCENCE.) If the medium is a crowd of small particles, as in the case of moonlight shining through a transparent fleecy cloud, colour effects are produced which are explicable only in terms of a wave theory of light. (See DIFFRACTION AND INTERFERENCE.) The colours of soap films and the thin wings of certain insects are explained on the same principle of the mutual interference of contiguous rays of light. Then, again, there is the property possessed by many crystalline substances of dividing a single ray into two separate refracted parts, one of which follows the ordinary law of refraction, and the other a peculiar law. This is the phenomenon of double refraction, closely associated with which are the many remarkable properties of polarized light. (See POLARIZATION OF LIGHT.)

Light is only a part of the

radiation given out by luminous bodies. In general these also emit heat rays and actinic rays, which differ from the light rays in their inability to affect our sense of sight.

When a solid is gradually heated up to the temperature of a low red heat, experiment shows that, before a distinct redness appears, a colourless and shifting gray glimmer is observed, and that a steadiness in luminosity is not attained until the dark-red colour appears. This proves that some part of the eye is sensitive to rays of longer wave-length than that of red light—to those, namely, which lie just beyond the dark red of the spectrum. It is further known that when coloured light is diminished sufficiently in brightness, the eye is unable to distinguish the colour. Thus it would seem that the eye responds more quickly to the stimulus of mere brightness or luminosity than to the stimulus of colour; and it has been suggested that this difference may be connected physiologically with the rods and cones, the two well-known structures present in the sensitive part of the human eye. See EYE and VISION.

Light and Air. By the Prescription Act, 1832, sometimes called Lord Teterden's Act, a tenement which has enjoyed continuously for twenty years the access of light to it through certain apertures or windows is entitled for ever to the uninterrupted enjoyment of light, unless the right has been enjoyed under an agreement in writing. Windows so entitled to light are called 'ancient lights.' The right is an easement, which may be lost by acquiescence in interference, and may be enforced by an action for damages or an injunction. But to constitute an actionable obstruction of ancient lights it is not enough that the light is less

than before. There must be a substantial privation of light, enough to render the occupation of the house uncomfortable according to the ordinary notions of mankind, and, in the case of business premises, to prevent the plaintiff from carrying on his business as beneficially as before (*Coles v. Home and Colonial Stores, Ltd.*, L.R. 1904, A.C. 179). The right to air apart from light is more difficult to sustain. The air must come through an aperture. Thus a windmill has no right to air. In Scotland 'ancient lights' are unknown, as a right to light and air can only be acquired by express grant. See Hudson and Inman on *Light and Air* (2nd ed. 1905), and Gale on *Easements* (7th ed. 1899).

Lightcliffe, eccles. par. and v.l., W. Riding, Yorkshire, England, 3 m. E. of Halifax. Pop. 4,000.

Light Cure. See FINSEN, N.R.

Lighter and **Lightermen**. Lightermen are persons employed in connection with lighters: these are flat-bottomed boats used to load or unload vessels in the docks or elsewhere. Thames lightermen are licensed, after an apprenticeship and oral examination, by the Watermen and Lightermen Company, a body which was incorporated in 1827.

Lightfoot, JOHN (1602-75), English divine, whose Hebrew and rabbinical scholarship make him one of the greatest Biblical commentators England has produced. He became master of Catharine Hall, Cambridge (1643), vice-chancellor of the university (1654), and sat in the Westminster Assembly (1643). He was also rector of Much Munden, Hertfordshire, for nearly thirty years. His principal works are *Harmony of the Four Evangelists*, unfinished (1644-50); *Harmony, Chronicle, and Order of the Old Testament* (1647); and

Lighthouse *Horæ Hebraicæ et Talmudicæ* (1658-74). See Pitman's Life, prefixed to his edition of Lightfoot's *Works* (13 vols. 1822-5), and Welton's *John Lightfoot, the Hebraist* (1878).

Lightfoot, JOSEPH BARBER (1828-89), English prelate and New Testament scholar, was born at Liverpool. After a brilliant career at Trinity College, Cambridge, he was elected a fellow of his college (1852), Hulsean professor of divinity (1861), and Lady Margaret professor (1875), with the additional honours of Whitehall preacher (1866), canon of St. Paul's (1871), select preacher at Oxford (1874), and bishop of Durham (1879). Lightfoot's commentaries on the epistles of St. Paul, *Galatians* (1865), *Philippians* (1868), *Colossians* and *Philemon* (1875), furnished with suggestive dissertations, belong to the highest order of Biblical scholarship. His most outstanding work is perhaps his edition of the apostolic fathers, *Clement of Rome* (1869; Appendix, 1877), and *Ignatius and Polycarp* (1885); while in his critiques of *Supernatural Religion* (1889) he rendered important service to the cause of Christianity. Other publications of note were *On a Fresh Revision of the English N.T.* (1871), an edition of Mansel's *Gnostic Heresies* (1875), and many volumes of sermons, essays, and miscellaneous works. See Westcott's *Bishop Lightfoot* (1894).

Lighthouse, a tower or lofty building erected on the coast, or on some rock at sea, and provided with a light which can be seen from a considerable distance. The most famous of ancient lighthouses was the Pharos of Alexandria; but, until comparatively modern times, such public works were few and very inefficient. One of the earliest British lighthouses was that built on the

Eddystone, about 14 m. from Plymouth. (See EDDYSTONE LIGHTHOUSE.) Another famous lighthouse modelled on Smeaton's principles is that of the Bell Rock, built by R. Stevenson (1807-10). It lies 12 m. off the coast of Forfarshire, and is exposed to the assaults of the North Sea. The Skerryvore light stands 12 m. off the island of Tiree in Argyllshire, and was built in 1838-43 by Alan Stevenson. The Bishop Rock lighthouse was erected after designs by James Walker (1858), and was altered by Douglass (1889). It stands between the Scilly Isles and the Lizard. Other notable British lights are those of the Dhu Heartach Rock, 14 m. off the isle of Mull; Casquet Rocks, near Alderney; Chickens Rock (1869), off the Calf of Man (1869-74); Smalls Rock (1778; rebuilt 1861); Needles (1858); St. Catherine's, Isle of Wight (1780; altered 1840); North Uist (1858); and Hanois Rock (1862).

A masonry lighthouse requires no fixing to the rock on which it is built, because friction between the materials is quite sufficient to guard against any lateral displacement. It is very important, however, that the bottom of the tower should rest upon horizontal surfaces, either cut in the form of steps, toothed, or flat, to bring the weight of the structure upon the rock in a truly vertical direction, and to prevent the existence of outward thrust. During the work of construction it is necessary to connect the stones of the lowest course to the rock, so that they may not be washed away before sufficient weight has been superadded to give security.

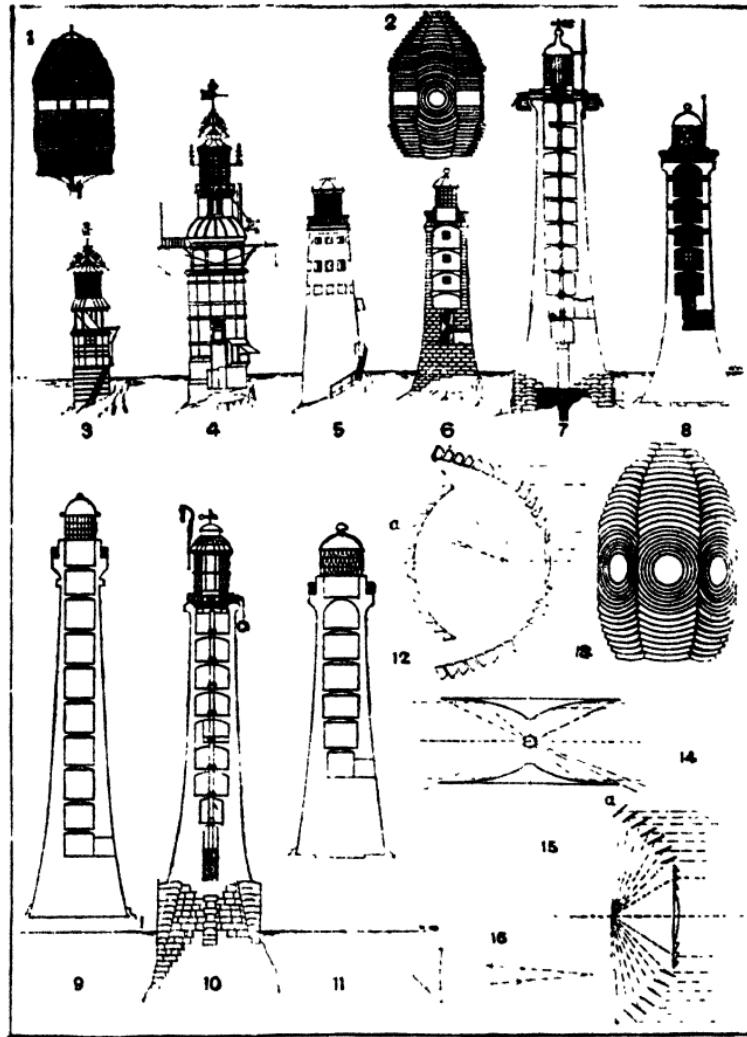
In the lighting of lighthouses either metal or glass may be used for reflection. Reflection is either 'catoptric,' where metal only is used, and the rays by con-

tact are reflected; or 'dioptric,' where glass alone is used, and where the rays are refracted. It may also be 'catadioptric,' when both glass and metal are employed. The first application of scientific lighting principles was in the parabolic reflector of Hutchinson of Liverpool in 1777. The light represented the focus of the parabola, and the reflector was parabolic—i.e. shaped like the inside of a saucer, but formed of a number of plane facets.

In 1822 and the following years Augustine Fresnel brought about a revolution by introducing glass lenses, glass cylindrical refractors, and totally-reflecting prisms. The first idea was a development of annular lenses which had been previously used for heat only and not for light. The lenses were cut in rings with a common centre, and were like steps ascending one from another. A small space in the centre was dome-shaped. This was the first advance in the direction of dioptric illumination, the reflector being in front of the flame. His next development was the cylindrical refractor, consisting of a glass cylinder the face of which was cut all round after the manner of his first lens, the flame being in the centre. This distributed the light all round, not in one direction only.

The totally-refracting prisms which Fresnel next introduced consisted of glass cut on an improved pattern, so that each ray was reflected once and refracted twice in a horizontal direction.

In another design Fresnel effected further great improvements, and made his glass refractors the primary light-directing influences. Thus the apparatus was entirely constructed of totally-refracting prisms; and this arrangement is still the basis of lighthouse illumination all over the world.



Some great Lighthouses and their Lanterns.

1. Fresnel's fixed light apparatus; cylindrical refractors. 2. Stevenson's combination: alternate panels of cylindrical refractors and of holophotal apparatus for revolving lights. 3. First Eddystone Lighthouse, by Winstanley; 4. Second, by Winstanley; 5. Third, by Eddystone; 6. Fourth, by Smeaton; 7. Fifth, by Douglass. 8. Bell Rock Lighthouse. 9. Sherryvore. 10. Bishop Rock. 11. Dhu Heartach. 12. Section of perfect form of dioptric holophote for oil flame; a. double-refracting prisms. 13. Stevenson's holophote for revolving lights. 14. Section of Bovill-Mareot's parabolic reflector for distributing light equally round the horizon. 15. Fresnel's catadioptric combination: a, metallic reflector. 16. Diagram showing action of double-refracting prisms (as in Fig. 13).

The different kinds of lights shown on lighthouses are as follows:—(1.) The fixed light. (2.) The revolving light, which comes into full view gradually, and as gradually disappears. (3.) The flashing light, which, at intervals of a few seconds, comes very quickly, though gradually, into view, and as suddenly disappears. (4.) The coloured light. (5.) The intermittent light, which is suddenly turned on and off at fixed intervals. (6.) Intermittent light of unequal periods; for instance, fixed for two seconds, eclipsed for five, fixed for two, eclipsed for two, and then fixed for two as at first, and so on. (7.) The group flashing light, where two or more flashes are followed by an eclipse of some seconds. (8.) Fixed lights illuminating the whole horizon, but showing revolving or intermittent characteristics over certain areas. The differences are effected by masks arranged like venetian blinds. (9.) The intermittent flashing light, a succession of quick flashes followed by a dark interval. The nature of any particular light is set forth in the various *Pilots*, which are issued under authority of the Admiralty.

Oil is found to provide a very satisfactory illuminant, especially with the new system of petroleum incandescent lighting, which gives great candle power; but electricity and gas, as well as acetylene, have their advocates, and are employed in many lighthouses.

The construction, management, and upkeep of lighthouses are provided for by tolls paid by shipping, and known as 'light dues.' These are fixed by Privy Council orders. English lighthouses are under the management of Trinity House; Scottish ones under the Commissioners of Northern Lights; Irish ones under the Ballast Board of Dublin. Many

British lights in the colonies are under the Board of Trade.

See numerous papers in *Proceedings of Inst. of Civil Engineers*, by Chance, Douglass, and others; Fresnel's *Mémoire sur un nouveau Système d'Eclairage des Phares* (1822); Stevenson's *Lighthouse Construction and Illumination* (1881); and Admiralty and other charts, *Sailing Directions*, and *List of Lights* (compiled annually to December 31).

Lightning, the bright flash characteristic of thunderstorms. Its identity with an electric spark, long suspected, was demonstrated by Franklin, who by means of a kite tapped a thundercloud of some of its charge. The first stage in the genesis of a thunderstorm is the establishment of a difference of electrical potential in the atmosphere. A thundercloud is, in fact, a mass of water-drops at an average electrical potential very different from that of the earth or of neighbouring clouds. This produces an electrical stress in the air, which is in the end unable to support the stress. The discharge takes place in the form of one or more lightning flashes, and the noise of the discharge is heard in the thunder-roll. When the discharge takes place from the cloud to the earth, there is not infrequently observed a double or even a triple flash along paths nearly coincident. This is believed to be due to an oscillatory discharge, such as is known to occur in the case of Leyden jars under certain conditions. The nature of the electric field and the configuration of the clouds will no doubt affect the character of the flash in detail, just as the electric spark is modified according to the nature and shape of the conductors and their distance apart. The two familiar types of lightning are forked lightning and sheet lightning,

and these probably correspond to the spark discharge and the glow discharge from an electric machine. A curious and comparatively rare form of lightning is the ball lightning, which has the appearance of a luminous ball floating through the air until it comes in contact with a solid body, when it explodes sharply. This phenomenon, the existence of which can hardly be doubted, still awaits explanation. It has never been obtained artificially.

Lightning Conductors. — The violence of the explosion with which a lightning flash passes constitutes a source of danger both to life and to buildings. Protection to the latter is secured by the use of lightning conductors, which are a means for facilitating the discharge from the electrified cloud to the earth. A flat strip or round rod of metal, preferably copper rather than iron to prevent rust, passes from the earth to above the highest point in the building, and terminates in one or more spikes. When an electrified cloud passes over, it induces a charge of electricity in the ground beneath (see ELECTRICITY, ELECTROSTATICS), which, in trying to get as near to the cloud as possible, collects on the spikes. It is often discharged from the spikes as a brush or silent discharge, appearing as a blue flame at the points (sometimes called St. Elmo's fire), and the electric pressure is relieved and the flash averted. This is one of the most useful actions of the lightning rod. But if the cloud above becomes suddenly electrified, perhaps by a flash from a higher cloud, there is no time for the brush discharge to act, and a flash is inevitable. This will naturally make for the nearest point, and usually strikes the rod, along which the electricity flows to earth without damage.

For this to occur some precautions are necessary. A long or wide building will not be completely protected by one rod. Every high point should be guarded, and even intermediate parts, so that no part of the roof is far from a rod. Also the rods must go as straight as possible down to earth. Any loop or large re-entrant bend is objectionable. The rods should be one quarter of an inch square if of copper, or larger for iron. Lastly, the connection to earth must be made of low electrical resistance by connecting to a large metal plate in wet soil, or to a large iron water main. If the soil is dry, a load of coke packed round the plate improves the earth connection.

The system is improved by connecting the rods together with horizontal wires, thus making a large network of conductors over the building, and the horizontal rods may advantageously have short aigrettes of metal projecting upwards. If the roof is covered with metal, this should be connected in many places to the conductors. The German rules advise that all large masses of metal should be connected together by wires, and connected to the conductors, including the iron gutters and pipes, and all should be well connected to the earth. The American system is very similar. But Sir Oliver Lodge and Mr. Killingworth Hedges recommend that, while carefully connecting such masses of metal and pipes to the earth, they should not be connected to the conductors proper, and the latter should be kept away from them. This is chiefly on account of the uncertainty of the earth connection of pipes, and the liability of bad metallic contact of the sections.

The question is being carefully considered by the Lightning Re-

search Committee of 9 Conduit Street, London, W. See Sir O. J. Lodge's *Lightning Conductors* (1892), and rules of the *Electrotechnischer Verein* of Germany.

Lightning Arresters. (See also TELEGRAPHY, TELEPHONY, and LIGHTNING.) A system for transmitting power by an electric current consists of a dynamo at one end of the line, and usually motors or transformers at the other. Through neither can a lightning flash pass, and a safe path to earth must be provided. One end of a thick wire or rod is connected to the earth, and the other end brought close to the line, with a gap so narrow that the lightning will easily jump across, though the smaller electrical pressure of the system is unable to do so. But often in these systems the other pole of the dynamo is joined to earth, and the current in the line, though unable to jump the gap by itself, can follow in the path of the lightning, since the great heat of the flash causes the air to



FIG. 1.

become a conductor of electricity, and the following current keeps up the heat. Therefore means are employed to stop the electric flame as soon as the almost instantaneous lightning flash has passed. The two sides of the gap are continued upwards as outwardly curving horns (Fig. 1), upon which the flame is driven by the rising of the heated air, assisted by the magnetic repulsion of the arc, due to the current in the wires and horizontal parts of the horns. An electro-magnet placed under the gap and actu-

ated by the current hastens this action.

Fig. 2 shows this combination, with connection to dynamo, line,

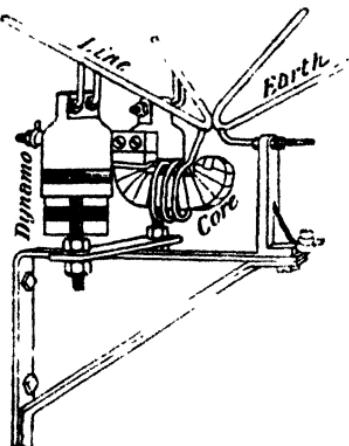


FIG. 2.

and earth. If the dynamo current attains to follow by the arc to earth, the current must pass through the coil, thus magnetizing the core and blowing out the arc. The coil also acts as a choking coil, to prevent the lightning flash passing to the dynamo, thus forcing the flash to travel by the spark gap to earth. Fig. 3 gives a diagram of the connections for this arrester.



FIG. 3.

In another type of arrester the electro-magnet pulls away one of the poles, thus lengthening the gap until the arc breaks.

A third type contains a very large number of narrow gaps, produced by placing a pile of discs of metal and mica alter-

nately. The top disc is connected to line, and the bottom disc to earth. The lightning easily jumps the narrow gaps, but the cooling effect of the mass of metal prevents the dynamo current from maintaining the arc. Fig. 4.



FIG. 4.

shows a double arrester on one earthed base. The metal used for the discs is usually zinc, as the arc is more easily extinguished between poles of zinc than of other metals, due probably to the rapid oxidation of the zinc.

Light Railways. See RAILWAYS, LIGHT.

Lights, in public worship. There is no direct evidence that lights were ceremonially used during the first three centuries of the Christian era. Some, however, consider that the 'many lights' at Troas, and the 'candlesticks' and 'lamps before the throne,' mentioned in Rev. 1:12 and 4:5, indicate their early adoption in churches. In the fourth and following centuries they were almost universal (Smith's *Dict. of Christian Antiquities*, ii. 993-8). St. Jerome alludes to the use of lights at the reading of the gospel as symbolic of the light of the Word of God (*Ep. adv. Vigilant*, iii.). Until the Reformation lights were placed in British churches either on the altar or on a shelf above it. They were discontinued in the Prayer Book of 1549, and it is a moot point whether they are now permitted by the 'Ornaments Rubric.' The position seems to be that they

are not illegal unless used for ceremonial purposes not authorized by the Rubric. See the judgment of the Privy Council in *Read and Others v. The Lord Bishop of Lincoln*, 1892, App. Cas. 644.

Lightship, a vessel moored out at sea with a light to mark a bank, shoal, or place dangerous to mariners. The first British lightship was fitted out by Robert Hamblin in 1731 to mark the Nore Sand; and David Avery caused one to be placed to mark the Dudgeon Shoal, Norfolk (1736). Some of the newer lightships in use are of 250 tons displacement, 103 ft. long, 23 $\frac{1}{2}$ ft. wide, and 12 ft. 10 in. deep. Lightships are under the supervision of Trinity House.

Light-Year, the distance traversed by light in one year, equivalent to nearly six billion miles, is the unit adopted for the measurement of sidereal space. The distance of a star in light-years is equal to 3 \cdot 26 divided by the parallax in seconds of arc.

Ligne, CHARLES JOSEPH, PRINCE DE (1735-1814), Austrian soldier, diplomat, and author, born at Brussels. He served with distinction through the Seven Years' war, and commanded the Austrian artillery at the siege of Belgrade (1789). During the reign of Joseph II. he held high diplomatic posts, was a favourite of Maria Theresa and of Catherine of Russia. His *Mélanges* were published in thirty-four volumes (1790-1811); *Oeuvres Posthumes* (1817); *Vie du Prince Eugène* (1809). His memoirs and letters, collected by Mme. de Staél (1809), are of considerable historic importance. See Lives by Thürheim (1876) and Du Bleu (1890).

Lignin, or woody fibre, is the product into which the cellulose first formed in a plant is converted, by incrustation with other

The latest type of Lightship: the Tongue Lightship, Mouth of the Thames.



compounds, probably belonging to the aromatic series, when changed into wood in the process of lignification. This causes a change of composition from that shown by the formula $(C_6H_{10}O_5)_n$ to that approximately expressed by $C_{12}H_{18}O_9$; and though in different woods the product differs considerably in physical structure, its composition and behaviour towards reagents present very similar features in all.

Lignites, or 'brown coals,' are mostly light, friable, and porous, showing their vegetable origin by the retention of the woody structure. Chemically they represent an intermediate stage between wood and coal. Nearly all lignites are of recent geological age as compared with coals.

Lignum Rhodii, the wood of *Convolvulus scoparius*, a shrubby species of bindweed, a native of the Canaries. The wood is often known as rosewood by distillers of essential oils, and the oil distilled therefrom is sometimes used to dilute attar of roses, whose fragrance it distinctly resembles. The term is also applied to the wood of *Amyrus balsamifera*, a Jamaican tree.

Lignum Vitæ, the wood of a West Indian tree, *Guaiacum officinale*, the duramen or heart-wood of which is of a dark greenish colour, and very hard, heavy, and cross-grained. It contains a quantity of the resin of guaiacum, by virtue of which it is much employed in pharmacy. (See GUAIACUM.) The *Lignum vitæ* of New Zealand is the aki, a giant climber, *Metrosideros buxifolia*, order Myrtaceæ.

Ligny, vil., prov. Namur, Belgium, 26 m. s.s.e. of Brussels. Here the Prussians were defeated by Napoleon before the battle of Waterloo (1815). Pop. 2,000.

Ligny-en-Barrois, town, France, in Meuse dep., 42 m. w. of Nancy. Pop. 5,500.

Ligonyl. See ELGON.

Ligor (Siam. *Lakhon*), chief Siamese prov. in the N.E. of the isthmus of Kra, in the Malay Peninsula; capital is Ligor, on N. side of Lakhon Bight. Tin-mining is the main industry of the province. Pop. Ligor circle 575,000.

Ligularia, a genus of hardy, perennial, composite plants, of which two or three species are sometimes cultivated in gardens. *L. macrophylla* is a tall-growing species from the Caucasus, with large oval leaves and terminal spikes of yellow flowers; *L. Kempferi aureomaculata* has large, variegated leaves, often mottled with white, red, or yellow.

Ligulate, a term used to describe the florets of certain composite plants, when the corolla tube ends in a straplike process on one side, as in the dandelion.

Liguori, ALFONSO MARIA DI, SAINT (1696-1778), a Neapolitan of good family, one of the greatest Roman Catholic writers of the 18th century, and the founder of the Congregation of the Redemptorists (1732). He was canonized by Gregory XVI. in 1839, and Pius IX. named him a doctor of the church (1871). His day is August 2. His works were published in forty-two volumes (1842-7), and his letters in three volumes (1893-94). See Lives by Tannoja (1848-49), Gisler (1887), Dilgakron (1887), Berthe (1900), and Meffert (1901). See also REDEMPTORISTS.

Liguria, div. of ancient Italy, bounded on the w. by the river Varus and the Maritime Alps, on the e. by the river Macra, separating it from Etruria, and on the n. by the Po. The name is now given to a compartmento of Italy, comprising the prov. of Genoa and Porto Maurizio. Area 2,037 sq. m.; pop. 1,311,000.

Ligurian Republic, the name given to the republic of Genoa in 1797 by Napoleon. Up to 1802 it

was ruled by the Directory. In 1805 it was incorporated with the French empire. See *Cambridge Modern History*, ix. (1907).

Ligustrum, a genus of plants, order Oleaceæ, characterized by opposite, entire leaves, and by terminal panicles of funnel-shaped flowers, followed by two-celled berries. *L. vulgare*, the common privet, is a native of Britain. Other species include *L. compactum*, the fragrant-flowered evergreen; *L. japonicum*, with its varieties; the evergreen *L. tucidum*; and *L. ovalifolium*.

Li-hsi, king of Korea, succeeded to the throne (1864). Before the war of 1894-5 Korea was a bone of contention between the Chinese and the Japanese. Li-hsi stoutly resisted the encroachments of China and her efforts to prevent him sending ambassadors to other courts. He was proclaimed emperor (1897). The country was formally annexed to Japan in August 1910.

Li Hung Chang (1823-1901), Chinese statesman, who first became known to Europeans through his association with Gordon in the suppression of the Taeping rebellion (1863). Li Hung Chang was then *taotai* (governor) of Kiang-su and generalissimo of the Chinese troops. In 1865 he was appointed viceroy of Nanking, and two years later was transferred to the viceroyalty of Canton. He subsequently became the viceroy of Tien-tsin, and held this position till his death. During the war with Japan (1894) he was for some time commander-in-chief of the Chinese forces, and on its conclusion negotiated the treaty of peace with the Mikado (1895). He visited the principal nations of Europe in 1896. In 1900 he was appointed by the dowager-empress of China to negotiate with the allies for the restoration of peace after the 'Boxer' massacres and the occu-

pation of Peking by the powers. Judged by a Chinese standard, Li Hung Chang was enlightened and progressive. See Douglas's *Li Hung-chang* (1895), and Mrs. A. Little's *Li Hung Chang* (1903).

Likin, or LEKIN, a Chinese provincial transit duty. For foreign goods, formerly subject to *likin* at many inland stations, 2½ per cent. may now be paid, instead of the custom-house duties.

Lilac, or PIPE TREE, a name given to shrubs belonging to the genus *Syringa*, order Oleaceæ. They are natives of temperate Europe and Asia. The flowers are small, with bell-shaped calyxes and tubular corollas, and are borne in great panicles. The common lilac, *S. vulgaris*, is perhaps the species that is most frequently seen, and of it there are violet, white, blue, and rose-coloured varieties. *S. chinensis* is the Rouen lilac, of rather smaller growth than *S. vulgaris*; *S. japonica* bears dense thyrses of creamy flowers during summer; *S. sibirica* is a pretty species, but its flowers are without scent; *S. persica* is the smallest of the lilacs, and of it there are several varieties cultivated in gardens.

Lilas, LLS, comm., France, in Seine dep., arr. of and 5 m. from St. Denis. Pop. 10,000.

Lilburne, JOHN (1614-57), English agitator, pamphleteer, and leader of the 'Levellers,' a party opposed to aristocratic power in the government. He was repeatedly whipped, pilloried, and imprisoned by the Star Chamber, and afterwards by Cromwell, for his seditious pamphlets. He subsequently became a Quaker. See LEVELLERS.

Liliaceæ, a natural order of plants, mostly herbaceous, with bulbous roots, of which a very large proportion are garden plants. The flowers are generally devoid of sepals, the corolla consisting of six petals. There are

six stamens inserted on the petals, a three-celled superior ovary, and a single style. Among the genera are *Fritillaria*, *Lilium*, *Scilla*, *Tulipa*, *Allium*, *Convallaria*, and *Hyacinthus*. The onion, leek, garlic, and chive are members of this order.

Liliencron, DETLEV, FREIHERR VON (1844-1909), German novelist and poet, was born in Kiel. Entering the Prussian army, he served in the campaigns of 1866 and 1870-71; and was employed by the German government until 1887, since when he has devoted himself to literature. Several of his novels, which include *Breide Hummelsbüttel* (1886), *Der Mäcen* (1890), and *Kriegerinnen* (1896), and the humorous epic *Poggfred* (5th ed. 1905), have gained a wide popularity; but his best work appears in his lyrics, *Adjutanternte* (1884); *Gedichte* (1889); *Nebel und Sonne* (1900). His *Sämtliche Werke* appeared in 14 vols. (1904-5). See *Lives*, in German, by Bierbaum (1892), Oppenheimer (1898), and Böckel (1904).

Lilith, a female demon of Hebrew folklore, supposed to be hostile to children, and to adults sleeping alone. The name appears but once in Scripture, but is translated 'screech owl' (Isa. 34:14; A.V. margin and R.V. 'night-monster'); it is, however, of frequent occurrence in rabbinical literature, where Lilith is regarded as Adam's first wife. (See ADAM AND EVE—*Later Developments*.) The word is doubtless connected with the Hebrew *layil*, 'night.' See W. R. Smith's *Religion of the Semites* (1889), and Sayce's *Hibbert Lectures* (1887).

Liliuokalani (b. 1838), queen of the Hawaiian Is., succeeded her brother, Kalakaua (1891); but in 1893 her treatment of the non-nationalized whites caused a Committee of Public Safety to call in the assistance of the United States. The queen was deposed

and a republic proclaimed (1894), and in 1898 the islands were formally annexed to the United States.

Lille, walled tn. and first-class fortress near the Belgian frontier, dep. Nord, France, 66 m. E.S.E. of Calais. It is situated in a level district on the Deule, of great fertility. It is one of the chief industrial towns of France, and is specially noted for its textile factories, in which linens, cottons, velvets, ribbons, and woollen goods are produced. There are also sugar, soap, and tobacco factories, dye works, chemical works, printing establishments, and distilleries; large bleach fields are found in the outskirts. Lille is the seat of a university (1,200 students) and of a Catholic seminary (500 students). Lille was taken by the Duke of Marlborough (1708). In 1792 it successfully withstood a terrible bombardment by the Austrians. Pop. (1911) 216,807.

Lillebonne, tn., France, in Seine-Inférieure, 20 m. E. of Havre. Pop. 6,200.

Lillehammer, tn., Norway, gov. of and 90 m. N. by w. of Christiania, at the N. extremity of Lake Mjösen. Pop. 3,000.

Lillers, tn., France, in Pas de Calais dep., 22 m. N.N.W. of Arras. Pop. (comm.) 8,000.

Lilleshall, par. and vil., Shropshire, England, 15 m. E. by N. of Shrewsbury; has coal and iron mines. Pop. 3,200.

Lillibullero, a scurrilous revolutionary ballad attacking the Roman Catholics, said to have been written by Lord Wharton (1686), and to have been set to music by Purcell. It takes its name from the refrain at the end of each couplet, 'Lero, lero, Lillibullero.' It helped to bring about the deposition of James II. in 1688.

Lilliput, an imaginary country on the shore of which Gulliver, the hero of Dean Swift's *Gulli-*

ver's *Travels*, was wrecked. The inhabitants were so diminutive—the height of a finger's length—that they regarded Gulliver as a monstrous giant.

Lillo, GEORGE (1693-1739), English dramatist, born in Moorfields. His play *George Barnwell* (1731) popularized the 'domestic drama' in England, and has been frequently revived. The best of his other plays are *Fatal Curiosity* (1736) and *Arden of Faversham* (1736).

Lilly, WILLIAM (1602-81), English astrologer and prophet, born in Leicestershire. He issued an annual almanac called *Merlinus Anglicus, Junior* (1644-81). Butler satirized him in *Hudibras* (1638-78). See his autobiography (posthumously published 1715).

Lilly, WILLIAM SAMUEL (1840), English author, has been under-secretary to the government of Madras (1869), and secretary to the Catholic Union of Great Britain (since 1874). He has written *Ancient Religion and Modern Thought* (1884), *Chapters on European History* (1886), *The Great Enigma* (1893), *First Principles in Politics* (1899), *India and its Problems* (1902), *Christianity and Modern Civilization* (1903), *Studies in Religion and Literature* (1904), and *Many Mansions* (1907).

Lilly (*Lilium*), a genus of bulbous plants, of the order Liliaceae. Most of the species have flowers of great beauty, and are therefore valued as garden or greenhouse plants. The flowers are borne either solitary at the top of the stems, or in a loose raceme. The perianth is usually more or less funnel-shaped, with free segments. Among the best-known and most-valued species are *L. tigrinum*, the common tiger lily, a Chinese species, growing about three feet high, and bearing many-flowered racemes of spotted orange-red flowers in late summer; *L. Wash-*

ingtonia, the Californian lily, bearing racemes of mauve-tinted, white, trumpet-shaped flowers of a delicious fragrance in June. *L. pyrenaicum* bears yellow flowers. *L. speciosum*, from Japan, bears large, broad racemes of pink-tinged (and pink-spotted) white flowers in summer. *L. tenuifolium* is a Siberian native, bearing long, scarlet, solitary flowers. *L. pardalinum* is a tall, fine Californian species, with purple-spotted orange flowers. *L. martagon*, the well-known Turk's cap lily, bears long, pyramidal racemes of dull purplish flowers with recurved perianths. *L. davuricum* bears scarlet flowers in July. *L. longiflorum* is a beautiful Japanese lily, bearing in summer very long, fragrant, white, infundibuliform flowers. *L. Hansoni* is also a Japanese species, having orange-coloured flowers with recurved perianths, a little after the form of *L. martagon*. *L. japonicum* bears flowers white within and mauve without. *L. giganteum* grows sometimes to a height of ten feet, and displays long, green-stained white flowers in June. *L. chalcedonicum* is a native of Greece; it bears pendulous scarlet flowers with recurved perianths. *L. auratum*, the golden-rayed lily of Japan, bears very handsome white flowers striped with yellow and spotted with purple. *L. candidum*, the St. Joseph's lily, or Madonna lily, with racemes of pure white flowers in summer, is perhaps the most commonly cultivated of lilies, and also one of the most beautiful.

Lilly, GIGANTIC, a name sometimes given to *Doryanthes excelsa*, order Amaryllidaceæ, a tall-growing Australian plant, often reaching twenty feet in height. It bears clusters of large red flowers in late summer. The fibrous tissues of its leaves are used in the making of rope.

Lily of the Valley, the popular name of *Convallaria majalis*, order Asparagaceæ, a common garden plant and rare British native. It has beautiful drooping, white, bell-like flowers borne in a long unilateral cluster, and possessed of a delicious and unique fragrance. The corolla is six-cleft, and there are six stamens.

Lilie, or **LILY**, **WILLIAM** (?1466-1522), English grammarian, born at Odiham. He was appointed first headmaster of the new St. Paul's school (1510), founded by Colet, and in conjunction with Erasmus he edited the *Eton Latin Grammar*.

Lima. (1.) Maritime dep. of Peru, S. America, bounded by the Pacific Ocean on the w., the dep. Junin on the E., Ancachs on the N., and Huancavelica on the s. Pop. 173,000. Area, 13,310 sq. m. The surface is mountainous, with fertile valleys on the w. slope. (2.) Capital of Peru and of above province, 7 m. from the port of Callao on the Pacific, in the valley of the Rimac. The cathedral is the most imposing building in the city; overthrown by the earthquake of 1746, which destroyed the greater part of the city, it has only recently been completely restored. Lima is the commercial centre of the country. Manufactures are developing; they include pottery, textiles, tobacco, beer, paper, soap, iron, copper, and furniture. The chief exports are silver, copper ore, cinchona, sugar, soap, nitre, chin-chilla skins, and vicuña wool. But the export trade really belongs to Callao. More than half of the inhabitants are Indians, half-breeds, Negroes, and Chinese. Lima (a corruption of Rimac) was founded in 1535 by Pizzaro. Its university dates from 1551. Pop. 141,000. (3.) City, Ohio, U.S.A., the co. seat of Allen co., 125 m. N.E. of Cincinnati; has large oil

refineries and railway shops. Pop. (1910) 30,508.

Limassol, or **LIMASOL**, seapt. on s. coast of Cyprus, 38 m. s.w. of Larnaca; chief seat of wine and carob trade. Plaster of Paris is exported, and salt is obtained in abundance from the salt lakes in the vicinity. It is w. of the site of the ancient Amathus. Here Richard I. was married to Berengaria in 1191. Pop. 8,500.

Limavady, mrkt. tn., Ireland, in co. and 16 m. E.N.E. of Londonderry; has linen-weaving. Pop. 2,700.

Lima-wood. See **BRAZIL-WOOD**.

Limbach, tn. in Saxony, Germany, 7 m. w.n.w. of Chemnitz; manufactures hosiery, gloves, and silk. Pop. (1910) 16,799.

Limbe, comm., Haiti, West Indies, near the N. coast, and 12 m. w. by n. of Cape Haytien. Pop. 15,000.

Limborch, **PHILIP VAN** (1633-1712), Dutch Arminian theologian, born at Amsterdam. He became a pastor at Gouda (1657), and professor of theology at the Remonstrant college in Amsterdam (1668). The work by which he is best known is *Institutiones Theologicae Christianae* (1686).

Limbourg, or **LIMBURG**, prov. of N.E. Belgium, bordered on the E. by the Meuse. It is flat, infertile in the N.W., but fertile in the E., and produces beetroot sugar, horses, and poultry. Chief minerals are iron, coal, and calamine. Area, 931 sq. m.; it is the smallest prov. in Belgium. Pop. 255,000. Chief tn. Hasselt.

Limburg, prov. of the Netherlands, between the Prussian Rhine prov. (on the E.) and the Belgium prov. of Limbourg (on the w.). It is drained by the Maas (Meuse). The marshy district of Peel occupies a large portion of the north of the province. Agriculture is at a high level, the cattle being famous. Coal is mined. Cap.

Maastricht. Area, 851 sq. m. Pop. (1910) 332,007.

Limburg-an-der-Lahn, walled tn. in Hesse-Nassau prov., Prussia, on the Lahn, 23 m. E. by N. of Koblenz; manufactures tobacco, cloth, leather, and machinery. The *Limburger Chronik* is an important historical record. Pop. (1910) 10,965.

Limburg-an-der-Lenne. See HOHENLIMBURG.

Limbis (Lat. 'edge'), in the scholastic theology, the border of hell. It was the abode of those for whom, in the nature of things, the merits of the Redeemer could not avail, but who were nevertheless not without natural goodness, either actual or possible. In Dante's *Inferno*, canto iv., l. 45, Limbo appears as the uppermost of the nine circles which subdivide the place of final expiation and doom, and contains the spirits of unbaptized infants and the virtuous heathen. See PURGATORY.

Lime. When calcium carbonate is strongly heated, in such a way that the carbon dioxide can escape, it decomposes, calcium oxide or quicklime remaining, $\text{CaCO}_3 = \text{CaO} + \text{CO}_2$. The calcium carbonate used is chiefly limestone or chalk, and yields a purer or 'fatter' lime the smaller the amount of sandy or earthy impurities present. The process is carried out in kilns, into which the calcium carbonate is regularly charged along with coal, which in burning gives out the heat required to bring about the decomposition, the lime being withdrawn periodically at the bottom. The firing may also be done by the combustion of producer gas. Quicklime is extremely infusible, and when wetted crumbles down into a voluminous white powder of calcium hydroxide or 'slaked lime,' much heat being evolved in the process. It is used for

the manufacture of the refractory crucibles employed for melting platinum, and is the substance which, when intensely heated, produces the lime light. Slaked lime is slightly soluble in water, forming an alkaline solution known as lime water, used as a test for carbon dioxide (with which it yields a milky precipitate of calcium carbonate) and in medicine. (See LIME WATER.) 'Milk of lime' is a thick liquid consisting of slaked lime suspended in water, and is the source of the hydroxide radical: for example, sodium hydroxide is obtained by boiling sodium carbonate with milk of lime. Slaked lime mixed with about three times as much sand or ashes is used for mortar and plaster—the setting chiefly depending on loss of water, followed by hardening caused by the action of carbon dioxide. For agricultural purposes, on most soils, from 50 to 100 bushels of lime per acre is an adequate dressing.

Lime Fruit (*Citrus medica*, var. *acida*), is a valuable fruit of the orange and lemon tribe, and can be grown in poorer and more exposed, though not in colder, situations than either oranges or lemons. The commonest variety is the small West Indian—other well-known sorts being the mandarin lime, or sour Rangpur, and the Tahiti. The sweet lime (*C. Limetta*) is a distinct variety of *C. medica*, and is said to occur wild in the Nilgiri Hills.

Lime Light. The oxides of certain metals, such as of calcium (quicklime), magnesium, thorium, zirconium, and cerium, which are white, bad conductors of heat, and practically infusible and non-volatile, possess the property of emitting an intense light when heated. This property was first utilized by Drummond in 1824; and besides its special application in the lime light, it is also employed in the mantles of incandes-

cent gas lamps. For the ordinary lime light, the calcium oxide, which should be as pure as possible, is cut into small cylinders, called 'limes,' of about the dimensions of a stout wine cork. One side of such a lime is heated white hot by projecting against it a very hot and narrow tongue of flame. Suitable flames are those produced by burning hydrogen, coal gas, ether, benzoline, or alcohol with oxygen, the last named of which, as well as hydrogen, and frequently coal gas, is compressed for use in cylinders of mild steel. Automatic regulators are usually attached, which reduce the pressure to one which is but little above that of the atmosphere. The light produced differs in name and effectiveness according to the method of application of the oxygen. If the flame used for a limelight be kept constantly directed at one portion of the lime, it is found that, the temperature remaining the same, the light rapidly falls off in intensity, and does not become constant till after half an hour. On account of this, and to prevent pitting, the lime is rotated and slightly raised by a bevel wheel and screw every few minutes, so that a fresh surface is continually being exposed.

Limerick. (1.) County, prov. of Munster, Ireland, s. of the Shannon. Much of the surface is comparatively level, but in the w. it is hilly, and on the s. border are Mullaghmore Mts., Ballyhoura Hills, and Galtee Mts.; in the N.E. are Slieve Felim Mts. (1,523 ft.); and in the centre, Ballingarry Hills. The soil is in general fertile, especially in the district of the Golden Vale, stretching from about the mouth of the Maigue into Tipperary. Agriculture and dairy-farming are important. The county comprises fourteen baronies, and returns two members to Parliament.

Co. tn. is Limerick. Area, 1,062 sq. m. Pop. (1911) 142,846. (2.) Municipal and parl. bor. and city, cap. of above co., on the Shannon, 77 m. N.W. of Waterford. The city comprises three parts—Irish Town, English Town (on King's Island), and Newtown Perry, the last being the modern and fashionable quarter. Lace manufacture, bacon-curing, flour-milling, creameries, and distilling are the principal industries. Its salmon fishing is important. Limerick was the last stronghold of James II. in Ireland. The bor. returns one member to Parliament. Pop. (1911) 38,403. See Lenihan's *Limerick: Its History and Antiquities* (1884).

Limestone. Limestones consist essentially of calcium carbonate, but are rarely altogether pure. They frequently contain silica, as quartz, flint, or chert; carbonate or oxide of iron; carbon, and other organic matters, such as bitumen or asphalt. When there is an admixture of clay they pass into marls; many of them have a considerable percentage of magnesium carbonate, and are known as magnesian limestones; by increase of this impurity they become dolomites. All limestones are soft rocks, and when attacked by cold dilute mineral acids they dissolve readily, giving off carbon dioxide with effervescence. There are two structural varieties of limestone—the crystalline, composed entirely of more or less well-developed crystals of calcite; and the organic, which are made up of fragments of calcareous organisms. Among the crystalline limestones the most important is marble. Stalactite, stalagmite, and calc-sinter are also crystalline. Organic limestones may be classified according to the predominant fossils, as crinoidal limestone, coral limestone, shelly limestone, cephalopod limestone,

nummulitic limestone, chalk (foraminiferal). Many oolites are of organic origin; others may have been deposited from solution. Limestones are readily soluble in waters containing carbon dioxide; hence in limestone districts the water circulating underground eats out caves and tunnels, and swallow holes and dolinas mark the surface. For the same reason limestone weathers readily, especially when exposed to the smoky atmosphere of towns containing sulphuric and other acids. Limestones are much used in building—e.g. Bath stone, Portland stone—and in the preparation of lime and cement, and as a flux in iron foundries.

Lime Tree (*Tilia europea*) is the linden tree of Germany. It is extensively planted in this country on account of its fairly rapid growth, and its tolerance of town atmosphere. It has a sturdy trunk, and slender, upright, close-growing branches. The leaves are large and heart-shaped, pointed at the apex, and with a downy under surface. The lime bears groups of very fragrant yellowish-green flowers, which are much sought after by bees. The wood of the lime tree is white and close-grained.

Lime Water, or *Liquor Calcis*, is prepared by shaking up pure slaked lime in distilled water, and decanting. It contains half a grain of calcium oxide (CaO) in one fluid ounce. It is of service in rickets and other diseases of malnutrition. Externally lime water dissolves false membranes, and checks the discharges from inflammatory skin diseases and sores. Mixed with an equal quantity of olive oil, lime water forms Carron oil, which is probably the best and most soothing application for burns.

Lim-Fjord, arm of the sea, 86 m. long, between the North Sea

and the Kattegat, bisecting N. Jutland. In the wider part of it, the so-called 'Broads,' lie the islands of Engholm, Gjöl, and Oland. Oyster beds have been laid down in the w. portion around Skruer.

Limit. If we have an endless sequence of magnitudes, and a point in the sequence can always be found beyond which every member differs from some quantity L by a quantity less than any assignable magnitude ϵ , then L is called the limit to the sequence. The theory of limits is of the utmost importance in rigorous mathematics. The differential coefficient is itself the limit of the ratio of two quantities as they tend to become zero. See CALCULUS, INFINITESIMAL.

Limitation, Statutes of. In England these statutes prescribe the periods after which a right of action is lost by lapse of time. By the Act of 1624 all actions on *simple contracts*, and for arrears of rent not on an indenture, and all actions for tort, with the exceptions hereafter mentioned, must be brought within six years of the origin of the cause of action; actions for injuries to the person, within four years; and actions for slander where special damage need not be proved, within two years. Merchants' accounts are included in the six years' period by the Mercantile Law Amendment Act, 1856; and trustees, in the absence of fraud, are protected after six years by the Trustee Act, 1888. But if there is a *written acknowledgment* of the debt, or part payment of principal or interest by the debtor or his agent within the six years, the case is taken outside the statute, and the time runs from such acknowledgment or payment (Lord Tenterden's Act, 1829).

By the Real Property Limitation Act, 1833, actions by or

against a deceased person for trespass on his estate, or by him, within six months of his death, may be prosecuted by his executors within a year, or against his executors within six months, of his death. All actions for rent on an indenture of demise, and for specialty debts, must be brought within twenty years; and all actions for copyhold fines and for arrears of rent-charges, within six years. By the Act of 1874, actions on a mortgage, or for a legacy, must be brought within twelve years of the last payment of principal or interest. By the rules of court execution must be levied within six years of a judgment. Actions for arrears of interest must be brought within six years. Actions for the recovery of land must generally be brought within twelve years of the commencement of the right, and the Act of 1874 makes elaborate rules for reckoning the period. In the case of land it is not only the right of action that is lost—i.e. the remedy—but the right itself is barred. Actions for the recovery of statutory penalties must be brought within two years, and many statutory offences are similarly limited. See PRESCRIPTION, and Banning's *On the Limitations of Actions* (1906).

Limitation of Estates. In English law real property cannot be made the subject of absolute ownership, as that belongs to the king, but only of estates of varying duration or quantum. The words used in any instrument to denote the quantum or duration of the estate granted are called words of limitation. Thus a grant of land 'to A B and his heirs' conveys an estate in fee simple, which is the largest estate known to the law, while a grant 'to A B and the heirs of his body' conveys an estate tail, and a grant 'to A B' merely conveys an estate for life.

Limited Liability. See COMPANY.

Limnaeus, a genus of gasteropod molluscs to which belong some very common pond snails. Like the garden snails and slugs they breathe air, the mantle chamber being converted into a 'lung'; but, unlike their terrestrial allies, they are adapted for life in water, rising to the surface to breathe only at intervals. The species of *Limnaeus* have elongated, spirally-coiled shells, which are of thin and horny texture. They are herbivorous in diet, and are commonly kept in fresh-water aquaria to keep down algal life. The largest form is *L. stagnalis*, to be found everywhere in ponds, ditches, and slow-running streams; but economically the most important is *L. truncatula*, which harbours one stage of the destructive liver-fluke.

Limnanthemum, a genus of aquatic plants, order Gentianaceæ, with cordate leaves and beautiful white or yellow flowers. The best known species are *L. indicum*, bearing yellow flowers with fringed margins; and *L. nymphaeoides*, a British perennial water plant, with similar flowers.

Limnanthes, a genus of hardy Californian annual plants, order Geraniaceæ. They have solitary regular flowers, usually white or pinkish in colour. The only species commonly cultivated is *L. Douglasii*, which has a prostrate habit, and bears yellowish-white, fragrant flowers.

Limnoria lignorum, or the GRIBBLE, a small (about one-sixth of an inch long) marine isopod crustacean which is very destructive to submerged wood. It is widely distributed. See ISOPODA.

Limoges (anc. *Lemovicum*), cap. dep. Haute Vienne, France, on r. bk. of Vienne, 50 m. N.N.E. of Périgueux. In the middle ages

it was celebrated for its enamel-work. It is now the principal seat of the porcelain manufacture. Other manufactures are cloths and druggets, nails, knives, shoes, clogs, gloves, and paper. There are remains of a Roman fountain and amphitheatre. Pop. 30,000.

Limon, or PORT LIMON, seapt., Costa Rica, Central America, an E. terminus of railway to Puntarenas, 72 m. E. of San José; has an excellent harbour. Exports coffee, tropical fruits, rubber, and dyewood. Pop. 5,300.

Limonia, a genus of tropical Asiatic shrubs, order Rutaceæ. The best known species is *L. acidissima*, an Indian shrub, very spiny, bearing racemes of white fragrant flowers, followed by red, globose berries.

Limonite, the hydrated oxide of iron ($2\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$), never occurs crystallized, but in fibrous, earthy, stalactitic, mammillary, porous, or concretionary masses, and often as pseudomorphs formed by weathering of other minerals such as pyrites or marcasite. Its colour is black or hair-brown, and the streak or fine powder is yellow, distinguishing it from haematite; sp. gr. 3·8, h. = 5. Impure limonite is found in moorland clay soils, and also in meadows and bogs in spongy nodules, and is hence known as bog iron ore. In fresh-water lakes it is often deposited as a brownish slime by the action of plants on the ferrous carbonate, and in Sweden and Norway this lake ore is periodically collected by raking the bottom of the shallow pools. Earthy limonite, or limonite mixed with clay, is known as yellow ochre. It is found in veins, especially in their oxidized upper parts; and where it can be obtained sufficiently pure, it is extensively used as an iron ore.

Limousin (anc. *Lemovices*), ancient prov. and gov. of France,

now forming the department of Corrèze and part of Haute Vienne. Cap. Limoges. It passed to Henry II. of England as part of the dowry of Eleanor of Aquitaine (1152), but was restored to France in 1369.

Limoux, tn., dep. Aude, France, on Aude R., 15 m. s.s.w. of Carcassone. It has trade in wine ('blanquette de Limoux'), corn, fodder, and cloth. Pop. 7,200.

Limpets are gastropod molluscs, characterized by the simple cap-shaped shell, and by the nature of the radula or tooth-ribbon. The common limpet (*Patella vulgaris*) is very plentiful between tide-marks. Limpets breed in spring, and the young are ciliated free-swimming larvae devoid of shells. The foot is an almost circular mass of muscle; around it is visible the mantle, lining the shell, and bearing a circle of vascular folds which functionally replace the missing gills. The mouth is at the end of a short proboscis; within it lies the very long radula, by means of which the limpet rasps its food from the surface of the rocks. At either side of the mouth are the tentacles, bearing each an eye at its base. Other smaller but very abundant forms are the tortoise-shell limpet (*Acanthaea testudinalis*), and the transparent limpet (*Helcion pellucidum*).

Limpopo, INNAMPURA, or CROCODILE, riv. of S. Africa. Rising in the Magaliesberg, w. of Pretoria, and flowing N.W. to Marico Drift, it describes a winding course N.E. and E. between Rhodesia and the Transvaal. At the Limvuba confluence it enters Portuguese E. Africa, through which it flows S.E., receiving the Olifants or Lipalule 120 m. from its mouth, and discharges, after a total course of about 1,000 m., into the Indian Ocean. Its mouth is obstructed by sandbars.

Limulus. See KING-CRAB.

Linaceæ, an order of herbs and shrubs, marked by bearing regular, hermaphrodite flowers with persistent sepals and petals, which fall soon after expansion. They are herbaceous plants, with very tough fibrous stems and oily seeds. *Linum usitatissimum*, the flax plant, is the source of most of the linseed-oil and linen of commerce.

Linacre, or **LYNAKER**, THOMAS (c. 1460-1524), English physician and humanist, born at Canterbury; studied at Oxford, Bologna, and Padua. When he returned to England he was made court physician to Henry VII., and also served under Henry VIII. and Mary. In 1509 he gave up practice to become rector of Merham and prebend of Wells, and in 1518 prebend of York. He was the first to teach Greek at Oxford; Erasmus and Sir Thomas More were among his pupils. See *Life* by Johnson (1835).

Linares. (1.) City of prov. Jaen, Spain, 25 m. N. by E. of Jaen; is the centre of a great silver-lead and iron-mining district. In 1908 some 670,000 oza. of silver were produced, and 126,600 metric tons of lead ores. There are manufactures of sheet lead, pipes, dynamite, and rope. Pop. 48,000. (2.) Province of Chile, bounded on the s. by Nuble, on the w. by Maule, on the N. by Talca, and on the E. by the Andes. Area, 3,940 sq. m. Industries, stock-raising and viticulture. Pop. 110,000. Cap. Linares, 170 m. s.s.w. of Santiago, with which it is connected by rail. Pop. 9,000. (3.) Town, Mexico, in Nuevo Leon, 75 m. N.E. of Monterey. Pop. 20,000.

Linaria, a genus of hardy plants belonging to the order Scrophulariaceæ. Their flowers are characterized by a personate corolla with a bearded palate which does not close the mouth. Spurred at the base. There are

four stamens, two being longer than the others. Among the British species are the yellow toad-flax, *L. vulgaris*; the sharp-pointed toad-flax, *L. elatine*; *L. cymbalaria*, the ivy-leaved toad-flax; and *L. spuria*, a less common annual. Among the garden species are the annual *L. spartea*, which bears deep yellow flowers; *L. reticulata*, yellow and purple; *L. purpurea*, purple; and the beautiful little perennial *L. alpina*, bearing yellow and blue flowers.

Linas or **Lynas Point**, headland in N. of Anglesey, North Wales, with a lighthouse visible 16 m. Signalling station for Liverpool vessels.

Lincei, ACCADEMIA DEI. See ACADEMY.

Lincoln. (1.) Municipal, county, and parl. bor. and city, cap. of Lincolnshire, England, on the Witham. The special industry is the manufacture of agricultural implements; there are also important horse and cattle fairs, and race meetings held annually. Lincoln Cathedral or Minster (founded about 1075) is a noble Gothic pile, doubly cruciform. In the central tower is the famous bell, 'Great Tom of Lincoln,' which weighs 5 tons 8 cwt. Lincoln was an important Roman station and a colony, *Lindum colonia*, established on the site of a British stronghold. Battles were fought here in 1141 and 1217. Pop. of bor. (1911) 57,294. See Venables's *A Walk through Lincoln* (1883); Kendrick's *The Cathedral of Lincoln* (1898); Freeman and Farren's *Cathedral Cities* (1899). (2.) City, Illinois, U.S.A., the co. seat of Logan co., in the central part of the state, 30 m. N.N.E. of Springfield. It stands amidst extensive coal deposits, and mining is an important industry. Pop. (1910) 10,892. (3.) Capital of Nebraska, U.S.A., the co. seat of Lancaster co., 54 m.

s.w. of Omaha. It is an important railway centre, and has large stockyards and meat-packing establishments. The University of Nebraska (3,266 students in 1909) is situated here. Pop. (1910) 43,973. (4.) Town, Providence co., Rhode I., U.S.A., 6 m. N. of Providence. Manufactures cotton. Pop. (1910) 9,825.

Lincoln, ABRAHAM (1809-65), sixteenth president of the United States, and one of the greatest of Americans, was born in Hardin co., Kentucky. Lincoln was brought up on his father's farm in Ohio, and till the age of nineteen was engaged in farm work. In 1828 he made a voyage to New Orleans, and there for the first time was brought into contact with slavery. After a varied experience as clerk, militia captain, storekeeper, and postmaster (to which office his growing political influence caused him to be appointed), he took up politics, and, with that career in prospect, he studied law, and was duly admitted. Elected to the legislature in 1834, he easily made himself felt among the Whigs, whose local leader he became. In 1842 he declined further nomination, and retired to the practice of his profession. For the time his political instincts slumbered, but they had a rude awakening when the Missouri Compromise was upset in 1854 by Douglas's Kansas-Nebraska bill, reopening the whole question of slavery. In 1860, Lincoln, now a man of national reputation, delivered his famous speech against slavery at the Cooper Union in New York, and as a result secured the republican nomination for the presidency, to which he was triumphantly returned. But his election was, if not the cause, at least the occasion of the breaking out of civil discord. South Carolina and the six Gulf states seceded and formed the Confederate

States (1861). Lincoln delivered his inaugural address, and made the final appeal for the union, denying absolutely the right of secession. The Confederates fired on Fort Sumter, and the civil war began. On New Year's Day, 1863, Lincoln issued the proclamation freeing all slaves in the rebel states; and a year later another proclamation made all slaves in the union free. During this war period Lincoln was the embodied spirit of the nation. It was his genius that averted foreign complications and international recognition of the Confederate States; and it was his enthusiasm that kept the nation keyed to the great effort. In 1864 he was again elected president, and his second inaugural address is perhaps one of the greatest orations the world has heard. With that speech his work was done. He entered Richmond, which had fallen before Grant, and on his return to Washington he was assassinated by an actor named Wilkes Booth while witnessing a theatrical performance in Ford's Theatre. See Nicolay and Hay's *Abraham Lincoln: a History* (10 vols. 1890), Hapgood's *Lincoln* (1899), and *The Cambridge Modern History* (vol. vii.).

Lincoln, BENJAMIN (1733-1810), American general, born at Hingham, Massachusetts; was a comrade of Washington in his earlier campaigns, and commanded the expedition which cleared Boston harbour of British vessels (1776). He unsuccessfully besieged Savannah (1779), surrendered Charleston to the British (1787), suppressed Shays's rebellion (1787), and was Secretary of War (1781-4).

Lincoln, HUGH OF. See HUGH OF LINCOLN.

Lincoln Judgment, THE, a celebrated ritual case of 1889. Dr. King, bishop of Lincoln, was cited before the Archbishop of

Canterbury for alleged ritual offences at the administration of the holy communion, said to have been committed in the church of St. Peter-at-Gowts on Dec. 4, 1887, and in Lincoln Cathedral on Dec. 10, 1887. On Feb. 12, 1889, Dr. Benson, the Archbishop of Canterbury, heard the case in Lambeth Palace Library. There were eight alleged offences:—(1.) That water had been mixed with the wine. (2.) That the chalice so mixed was administered to communicants. The decision on these was that ceremonial mixing would be illegal, but that to mix water with the wine before the service was in accordance with primitive practice, and not forbidden in the Church of England. (3.) Ceremonial washing of the vessels after communion, and the drinking of the water used in ablution. This was pronounced legal. (4.) The adoption of the eastward position at the altar. This was judged to be no offence. (5.) That the manual acts were not visibly performed. It was decided that all such acts must be done before the people. (6.) That two candles were lighted on the super-altar. It was ruled that such were permissible. (7.) That the Agnus Dei was sung. This was permitted. (8.) That the sign of the cross had been made in the air at the benediction. This was declared illegal. The promoters appealed from this judgment to the Judicial Committee of the Privy Council, and their appeal was heard in June and July 1891. The appeal, however, failed at all points, and the judgment still stands.

Lincolnshire, maritime co. in the E. of England, between the Humber and the Wash. The surface is in great part flat and low, especially in the E. and S., belonging to the Fen district, now reclaimed. Through the centre

and north-east stretch the Wolds, ranges of low cretaceous hills; more to the W. the Cliff range traverses the country N. and S., with steep western face S. of Lincoln. The coast is bordered by sand-dunes, and between Grimsby and Skegness there are traces of a submarine forest. Principal rivers are Trent in N.E., Ancholme in N., Witham in centre, and Welland in S., and these are connected by a network of canals and dykes, some of the latter being also navigable (Carr, Foss, etc.). The soil is fertile and highly cultivated, the coast-lands and the margins of the Trent being enriched by 'warping,' or the deposit of sediment by the tide. The chief industries are agricultural and mineral. Cereals form the leading crops; large numbers of sheep, cattle, and horses are reared; and iron ore, building-stone, gypsum, limestone, and brick-clay are worked. The county, which for administrative purposes is divided into the three county divisions of Lindsey, Kesteven, and Holland, returns seven members to Parliament. Area (ancient co.), 2,607 sq. m. Pop. (1911) 557,543.

Lincolnshire Handicap, THE.

See RACE MEETINGS.

Lincoln's Inn. See INNS OF COURT.

Linocrusta, a substance used in ornamental plastic material, invented by James Walton. Composed of cellulose paper and pulverized cork, it is compressed, soaked with oil and resin, and stamped with dies to give an impression in low relief.

Lind, JOHANNA MARIA (1820-87), known as Jenny Lind, soprano vocalist, born at Stockholm, Sweden, where she received her first lessons in singing from Berg and others in the Court Theatre. She made her début in her native town (1838), and subsequently studied

with Manuel Garcia in Paris. In 1844 the influence of Meyerbeer secured her an operatic engagement in Berlin, and from this time onwards her success was assured. Her first appearance in London (1847) created scenes of extraordinary enthusiasm. She retired from the operatic stage in 1849, and was afterwards heard only on the concert platform. While on tour in America (1852) she married Otto Goldschmidt (1829 - 1907), her accompanist. Jenny Lind possessed a voice of rare brilliance and sympathetic quality, with a compass of from D to D in alt., and her executive powers were of the highest order. She practically retired in 1870, but was a professor of singing in the Royal College of Music, London (1883-6). See Memoir by Holland and Rockstro (ed. 1901).

Lindaas, comm., Norway, 26 m. N.N.W. of Bergen. Pop. 6,600.

Lindau, anc. tn., Swabia, Bavaria, on a small island (connected with the mainland by a railway embankment and wooden bridge) at N.E. extremity of Lake Constance, 25 m. E.S.E. of Constance. The Rathaus—a fine specimen of renaissance architecture (1422-36)—and the Roman tower are interesting. Pop. (1910) 6,620.

Lindau, PAUL (1839), German dramatist, novelist, and critic, was born in Magdeburg, and, after a journalistic training in Paris, became editor of the *Düsseldorfer Zeitung* (1863). In 1872 he founded *Die Gegenwart*, which he edited till 1881, and in 1877 founded *Nord und Süd*. Meantime he had published two books of travel, *Aus Venetien* (1864) and *Aus Paris* (1865), and had become known as a critic, his most noteworthy productions being *Harmlose Briefe eines Deutschen Kleinstädters* (1870), *Literarische Rücksichtslosigkeiten* (1871), *Molière* (1872), and *Alfred de Musset* (1877). Of his

novels, the best are *Herr und Frau Bewer* (1882); a series on Berlin (1886-8); and *Vater Adrien und andere Geschichten* (1893). His dramatic works, somewhat lacking in originality and force, have been collected under the title *Theater* (1873-88). Other works are *Aus dem Orient* (1889) and *Altes und Neues aus der Neuen Welt* (1893).

Lindeblad, OSKAR (1800-48). Swedish author, studied at Lund, where he greatly distinguished himself by his poetic writings.

Linden. (1.) Tn., prov. Hanover, Prussia, immediately w. of Hanover. Manufactures include machinery, velvets, woollen goods, carpets, chemicals, sugar, rubber, and artificial manures. Pop. (1910) 73,352. (2.) Tn., Prussia, in Westphalia, circle of Hatten-gen; has coal mines. Pop. (1910) 11,974.

Linden Tree. See LIME TREE.

Lindisfarne. See HOLY ISLAND.

Lindlar, tn., Prussia, in Rhine prov., 20 m. E.N.E. of Cologne; has iron-works and lead mines. Pop. (1910) 6,669.

Lindley, JOHN (1799-1865). English botanist, born at Catton near Norwich. He translated Richard's *Analyses du Fruit*, and wrote *Monographia Rosarum* (1820), illustrated with drawings by himself. Migrating to London, he became professor of botany in University College (1829), and lecturer in botany to the Apothecaries Company in 1836. His chief works are *Introduction to the Natural System of Botany* (1830); *The Vegetable Kingdom* (1846); and, in conjunction with Hutton, *The Fossil Flora of Great Britain* (1831-7).

Lindley, NATHANIEL, BARON LINDLEY (1828). English jurist, born at Acton Green, son of the preceding; was called to the bar (1850), and made a judge (1872). In 1875 he was knighted, and ap-

pointed judge to the Court of Common Pleas. He became master of the rolls in 1897, and from 1900 to 1905 was a lord of appeal in ordinary. Lord Lindley has written several valuable works on law, including *Introduction to the Study of Jurisprudence* (1855), a *Treatise on the Law of Partnership* (7th ed. 1905), and *The Law of Companies* (6th ed. 1902).

Lindley, WILLIAM (1808-1900), English civil engineer, born in London; learnt engineering under Francis Giles, and was appointed chief engineer to the Hamburg and Bergedorf railway (1838). He designed the Hamburg waterworks on a system now usually adopted on the Continent; constructed the sewerage works; reclaimed the 'Hammerbrook' district; and planned the rebuilding of the city after the fire of 1842.

Lindleya, a genus of Mexican evergreen trees, order Rosaceæ. There is only one species, *L. Mespiloides*. It grows to a height of about twenty feet, and bears solitary white fragrant flowers in summer. The flowers are followed by capsular fruits.

Lindo, MARK PRAGER (1819-79), Dutch prose writer, born in London; went to Holland at nineteen. He translated the works of Dickens, Thackeray, Fielding, and Scott into Dutch, and wrote many humorous and original sketches of Dutch life, such as *Familie van Ons* and *Afdrukken van Indrukken*. He founded the *Nederlandsche Spectator* (1856), in which much of his best work appeared.

Lindsay, co. seat of Victoria co., Ontario, Canada, on Scugog R., 60 m. N.N.E. of Toronto. Trade in grain, lumber, and flour. Manufactures iron, machinery, leather, and beer. Pop. 7,000.

Lindsay, LORD OF THE BYRES. See CRAWFORD AND BALCARRES.

Lindsay, or LYNDSAY, SIR DAVID (1490-1555), Scottish poet,

and Lyon King of Arms, was the son of David Lindsay of the Mount, Fifeshire, and of Garmilton, Haddington. He was a member of the royal household by November 1511; and on the birth of the young prince, afterwards James V., April 10, 1512, he was appointed keeper of his person. When the government was usurped by Angus in 1526, Lindsay and also the king's tutors, Gavin Dunbar and John Bellenden, were dismissed; but after the escape of James from the Angus domination, Lindsay was appointed Lyon King of Arms (1529). He compiled a *Register of Scottish Arms* (1542), now in the Advocates' Library, Edinburgh, which was published in 1822, and republished in 1878. Nearly all the poetry of Lindsay has a social or political aim. He seeks to attain his purpose mainly by satire, and often by satire that is broadly indecorous. His more important poems are *The Dreme*, an allegorical medley, with a very manifest political and social moral; *The Complaynt of the Papyngo*, in which the greed of the ecclesiastics is specially satirized; and the remarkable drama, *Ane Satyre of the Three Estatis*, an interesting link between the old 'morality play' and later drama. The modern editions of Lindsay's poems are those of Chalmers (1806), the English Text Society (1865-71), and Laing (1879).

Lindsay, DAVID (1856), Australian explorer, was in the S. Australian survey department from 1873 to 1882, and leader of the Arnhem's Land Exploring Expedition, which discovered and mapped a great extent of country in spite of terrible hardships. In 1885 he conducted a private expedition, in which he surveyed 550 m. of boundary lines, and discovered the 'Rubies' in the MacDonnell Ranges.

Lindsay, JAMES BOWMAN (1799-1862), Scottish scientist, born at Carmylie, Forfarshire. Although in humble circumstances, he devoted himself to science, and discovered the heating and lighting possibilities of electricity as early as 1834, and lit his garret in Dundee with electric light. He was also a pioneer of wireless telegraphy, and transmitted messages by this means across the Firth of Tay.

Lindsay, ROBERT OF PITSCOTTIE (?1532-?1578), Scottish chronicler, son of William Lindsay of Pyotstoun, near Pitcottie, Fife-shire. Little is known of his life. His *Chronicle* is avowedly a continuation of Hector Boece's Latin *History of Scotland*, translated by John Bellenden, and extends to 1575, there being also a continuation, by another writer, to 1605. Its chronology is vague and often misplaced, and there are many errors; but the narrative abounds in picturesque detail, much of it probably borrowed from the old ballads. Lindsay's narrative was first published by Robert Fairbairn (1728); an edition by Graham Dalzell appeared (1814); and an edition founded on all the available MSS. has been published by the Scottish Text Society.

Lindsayia, a genus of tropical ferns. Among the most beautiful of the species are *L. Guianensis*; *L. cultrata*, very fragrant; *L. adiantoides*; *L. reniformis*; and *L. stricta*.

Lindseys, Earls of CRAWFORD AND BALCARRES. See CRAWFORD.

Lindsey, PARTS OF, and LINDSEY N., S., E., and W. The former refers to one of the three divisions of the administrative county of Lincolnshire, and the latter to four of the seven parliamentary divisions of that county.

Línea, or La LINEA, tn. of S. Spain, in the prov. of Cadiz, between Gibraltar and San Roque,

and within the Spanish lines—hence the name. Pop. 30,000.

Linear Measure. See WEIGHTS AND MEASURES.

Linen, a fabric spun and woven from the fibres of flax (*Linum usitatissimum*), a plant of the order Linaceæ, which grows from two to three feet in height. It is widely grown in Europe, Asia, and America. The art of spinning and weaving flax into linen is very ancient. Linen is mentioned in the Bible, and has been found as mummy-cloths in Egypt. Linen is manufactured in France, Belgium, and Germany. The first mill for spinning yarn by machinery was built at Darlington in 1787. In 1790 mills were erected in Scotland, the first near Glamis. But though Cartwright's loom was applied to the weaving of cotton in 1785, the first successful factory for weaving linen by power-looms was not erected till 1812. The total annual value of linen manufactures exported from the United Kingdom is about £6,000,000 yearly. Of late years the manufacture has shown signs of decline through competition with jute for heavy goods, and with cotton for finer fabrics. Damask at the present time is often woven of cotton and linen together. In Ireland very artistic coloured linens are produced.

Process of Manufacture.—The stems of the flax planta, after being pulled up by the roots, are converted into a textile fabric by the processes of 'rippling,' 'retting' or 'steeping,' 'grassing,' 'breaking,' and 'scutching.' *Rippling* is the process of separating the seeds from the plant by means of 'beaters,' which loosen the seeds, and 'shakers,' which shake them out from the flax straw. *Retting* is the process of getting rid of the resinous matters present in the plant. This is done by steeping the flax stems

in water and subjecting them to fermentation. Soft water is essential. *Grassing* is the drying of the flax stems. They are then passed between horizontal fluted rollers, which break up the woody portion of the stems and render it easy afterwards by means of *scutching* to separate the brittle, woody part of the stem from the fibrous portion. The latter is now made up into bundles and sent to the mill to be spun into yarn. The flax is then roughly sorted and 'heckled.' The 'heckling' process separates the long and best portion, called 'line,' from the short and ravelled portion, called 'tow.' A hand-heckle is an oblong stock of wood, with strong steel teeth about 7 in. long. The heckler takes a handful or 'strick' of the flax and draws it several times through the teeth; then he turns the strick and heckles the opposite end in the same way. This process is now usually accomplished by machines. After the heckling is completed, the flax 'line' is prepared for spinning by various machines. (1.) The spreading-frame. On this the flax is formed into a continuous ribbon called 'sliver.' (2.) The drawing-frame. On this the 'sliver' is doubled and drawn out by rollers through travelling gills with steel teeth. There are often four drawing-frames, each successive frame with finer gill teeth than the one before; and from eight to fifteen 'slivers,' delivered by one machine, are drawn out into one 'sliver' by the next. The object of this doubling and drawing is to produce a 'sliver' of uniform size throughout and with all fibres parallel. (3.) The roving-frame. Through this the attenuated fibre is passed singly, and the frame is provided with a flyer which slightly twists the 'sliver' and a bobbin on which it is wound. The 'rove' or 'rovings' are now spun into yarn on

the 'throstle' machine, invented by Arkwright, in the same manner as cotton, excepting that in spinning flax fibre the fine yarn must be spun wet, at a temperature of 120° F. Coarse and heavy yarns may be spun dry. In weaving, hand-looms are still employed for fine linens, such as lawn and cambric, to some extent, but, generally speaking, the work is done by power-loom. In 'tow' spinning the fibre is carded like jute on carding engines, each of which has a peculiar arrangement of revolving cylinders armed with pins of steel wire. It is then like the 'line' placed in the drawing-frames. After the weaving process the linen has to be bleached. See BLEACHING; also Wilson's *Flax and its Manufacture* (1888); Charley's *Flax and Linen* (2nd ed. 1877); Leggatt's *Theory and Practice of the Art of Wearing Linen* (1893).

Lines of Communication. Before entering upon field operations, it is necessary to have a secure base of operations. The movement across the seas of any large body of troops, with their attendant equipment and stores, necessitates a disembarkation on a seashore, and a preliminary collection and organization of matériel. Where the theatre of war is far from a seaport, the base is necessarily inland. The selection of a base in a friendly country has obvious advantages, but it may often happen that the situation of a base can only be secured by force or by stratagem. As an army moves forward, lines of communication become necessary, along which the personnel and matériel collected are forwarded, and by which sick, wounded, prisoners, etc., are removed from the theatre of actual hostilities. The length of the line may vary from a few miles, as in the Crimean war, to hundreds of miles, as in the Nile expedition or the S.

African campaign of 1899-1902. The line consists of a chain of military stations connected by a route traversed by rail, road, or river transport, or a combination of all three. With an unfriendly population, such as that in the Orange State and the Transvaal, a large force is necessary to guard the line. Each station or dépôt becomes a defensive fort, block-houses protect vulnerable points such as defiles or bridges, and flying columns are held ready to keep the enemy at a distance. As the army advances the length of the line of communication increases, and it is necessary to organize it into sections. A dépôt is formed wherever there is a break in bulk in the conveyance of stores; and there must be hospitals, rest stations, and accumulations of commissariat and ordnance stores at important points in each section. Unless the lines of communication be very short, executive authority along them is organized into two distinct branches: (a) defence; (b) administration and traffic control. The commander of defences is responsible to the commander of the field army for the security of the communications, and for the government of any portions of them which are under martial law. Administration and traffic control is under an inspector-general of communications. This officer is responsible for the selection of bases, and for the siting of dépôts, hospitals, etc. He arranges for the supply of the lines of communication guards, but has no authority over their tactical employment. He is responsible that the requirements of the field army are forwarded with the utmost dispatch. He has under him administrative commandants for each section. The directors of railways, works, remounts, veterinary, ordnance, and postal services will, as a rule,

be under his command, as will a representative of the director of army signals. See also SUPPLY and TRANSPORT.

Lines of Force. See MAGNETISM, CONDENSER, ELECTROSTATICS, and other electric articles.

Ling. See CALLUNA.

Ling (*Molva molra*), a member of the cod family, is found from Spitzbergen to the Strait of Gibraltar, and on the other side of the Atlantic to Newfoundland. It is common in the deeper water in the northern part of the North Sea, at the Faroes, and on the west coast. The ling spawns from April to June, and is the most fecund fish known, a large female producing from fifty to sixty million eggs, which are buoyant or pelagic. The young undergo remarkable transformations in appearance. Ling feed almost entirely on other fish. They are caught chiefly by lines, but also by trawls, and form an important item in the fisheries.

Lingah, or **BANDER LINGAH**, seapt., prov. Laristan, Persia, on Persian Gulf, 100 m. s.w. of Bender Abbas. Trade in pearls, dates, rice, specie, and cotton and woollen stuffs. In 1908 the total exports were £91,601, and its imports £127,818. The Arabs held the port until 1898. Pop. 15,000.

Linga Puja. See PHALLUS and PHALLIC WORSHIP.

Lingard, JOHN (1771-1851), English historian, born at Winchester, and educated at the Roman Catholic College of Douay, France. Returning to England, Lingard was ordained priest (1795); and later became vice-president of the Roman Catholic College at Crook Hall, and afterwards at Ushaw, Durham county. He retired to a private mission at Hornby in Lancashire (1811). His great work is the well-known *Hist. of England* (1819-30; new ed. 1903).

Lingayén. (i.) Pueblo, cap.

of prov. Pangasinan, Luzon I., Philippines, 100 m. N.N.W. of Manila; important trade (chiefly in rice and nipa-wine) centre and favourite health resort. Pop. 22,000. (2.) Gulf on W. side of Luzon I., Philippines, about 30 m. long and 20 m. wide.

Lingen, tn., Hanover, Prussia, on Ems Canal, 43 m. N.N.W. of Münster. Iron foundries, machinery, and railway works. Pop. (1910) 8,021.

Lingfield, par. and vil., Surrey, England, 10 m. S.E. of Reigate. Pop. 3,700.

Linggi, or **LINGGY**, riv., British colony of Malacca, Malay Peninsula, of which it forms the W. boundary.

Lingua Franca, a corrupt form of Italian, spoken in commercial intercourse in the Mediterranean. The word means 'free tongue,' and denotes any language in general use, in conversational intercourse, between foreigners and natives, over a wide extent of country.

Linguaglossa, tn., prov. Catania, Sicily, on N.E. slope of Mt. Etna, 24 m. N. of Catania. Pop. 13,000.

Lingula, a genus of brachiopods, represented by numerous fossil forms and by living species, of an interesting simplicity of form.

Lingula Flags, strata belonging to the Upper Cambrian formation, in some parts of Wales over five thousand feet thick. See CAMBRIAN.

Linievitch, NICOLAI PETROVITCH (1834), Russian general, comes of a well-known Polish Catholic family distinguished in border struggles against Turk and Tartar. He served in the Polish insurrection, the Russo-Turkish war, and the China expedition. After the disastrous battle at Mukden (March 7-10, 1905), where he commanded the Russian left against Kuroki,

Linievitch was appointed commander-in-chief in succession to Kuropatkin. See RUSSO-JAPANESE WAR.

Liniments, or **EMBROCATIONS**, are employed to cause irritation on the skin, and so relieve inflammation existing beneath by drawing it to the surface.

Linköping, cap. of the Swedish prov. of Östergötland, situated in a fertile plain near the Stångs, 29 m. W.S.W. of Norrköping. Manufactures tobacco, cloth, and hosiery. Pop. 18,000.

Links. See GOLF.

Linley, THOMAS (1732-95), English musical composer, born at Wells, Somerset. In 1775 Linley, with his son Thomas, composed the music for *The Dvenna* written by Sheridan, his son-in-law. The following year he purchased an interest in the Drury Lane Theatre, and became musical director there. Among his operatic compositions are *The Camp*, *The Carnival of Venice*, *Robinson Crusoe*, and *The Triumph of Mirth*. He also wrote a number of cantatas, madrigals, and songs.

Linlithgow, ancient royal burgh, and co. tn. of Linlithgowshire, Scotland, 16 m. W. of Edinburgh, near S. shore of Linlithgow Loch. On an eminence, bordered by the loch, is the ruin of Linlithgow Palace, which dates from the time of David I., but was largely rebuilt by James IV. and James V. The national parliament met there for the last time in 1646. It was the birthplace of James V. and of Mary, Queen of Scots. At Linlithgow the Regent Moray was shot by Hamilton of Bothwellhaugh in 1570. Industries, tanning and currying, paper-making, and brewing. Pop. (1911) 4,002.

Linlithgow, JOHN ADRIAN LOUIS HOPE, FIRST MARQUIS OF (1860-1908), Scottish statesman, born at Hopetoun, near Edinburgh. As Earl of Hopetoun he

filled several parliamentary and official positions, including that of governor of Victoria (1889). In 1901 he was appointed first governor-general of the Commonwealth of Australia, and was Secretary of State for Scotland during part of 1905. He was created a marquis of the United Kingdom (1902).

Linlithgowshire, or WEST LOTHIAN, midland co. of Scotland, bounded on the N. by the Firth of Forth, s.e. by Edinburghshire, s.w. by Lanarkshire, and n.w. by Stirlingshire. The surface is flat along the coast, and rises gradually towards the s., where it attains an average elevation of 700 ft. The principal rivers are the Almond and the Avon. The soil is fertile, except in the moorland and rocky parts in the s. and s.e. Area, 120 sq. m., of which 76 per cent. is under cultivation. Coal is largely mined at Bo'ness and Bathgate; oil-bearing shales in Bathgate, Whitburn, Linlithgow, Abercorn, Dalmeny, and Uphall parishes. Large paraffin works have been established at Dalmeny, Broxburn, Winchburgh, Uphall, Philipstoun, and Bathgate. Iron ore occurs in the parishes of Bo'ness, Abercorn, Torphichen, and Bathgate. There are blast-furnaces at Kinnel. Sandstone is quarried at Philipstoun, Winchburgh, and Bo'ness. The Union Canal crosses the county. The principal towns are Linlithgow (co. tn.), S. Queensferry, Bathgate, Bo'ness, and Armadale. The co. returns one member to Parliament. Pop. (1911) 79,456.

Linnæa, a genus, order Caprifoliaceæ, with only one species, *L. borealis*, a trailing evergreen, shrubby plant, sometimes found wild in Britain. It bears fragrant pendulous, campanulate, flesh-coloured flowers, and is a good rock plant, requiring shade, moisture, and peat.

Linnaeus (von Linne), CARL (1707-78), botanist and systematist, was born at Rashult in Sweden. At the age of twenty-three he took charge of Professor Rudbeck's botanical garden, and delivered botanical lectures. During this period he began the composition of some of his most important works, and after botanical journeys in Lapland and Dalecarlia he went in 1735 to Holland. Here he spent three fruitful years, marked alike by the publication of several important works—*Bibliotheca Botanica*, *Classe Plantarum* (1738), *Genera Plantarum*, *Fundamenta Botanica* (1736), *Systema Naturae*, etc.—and by visits to England and France. In 1738 he returned to his native country, and, after practising medicine in Stockholm, went in 1741 to Upsala as professor of botany. Here he remained till his death, publishing *Philosophia Botanica* (1751), and leaving behind him a curious treatise called *Nemesis Dirina*.

Linnaeus's services to natural science, and especially to botany, were very great. Much of his work was the summing up and systematizing of the results of his predecessors' labours, and though he himself fully acknowledged his obligations in this respect, in popular belief he has been credited with much that was really done by Cesalpino, Morison, Ray, Tournefort, and others. To him we owe the binary nomenclature of organisms and an artificial classification of plants. In addition to this artificial system, Linnaeus left behind him a fragment of a natural system which was of great value to later workers. In so far as scientist means investigator of causes he was not truly scientific, for his love of order was greater than his love of nature. But without such as he it may be doubted whether scientific prog-

ress would be possible. In two respects, however, Linnaeus's influence distinctly retarded progress. First, he lent the weight of his authority to the doctrine of the constancy of species, to which, indeed, he for the first time gave precise expression. Secondly, his own indifference to morphology, except as a means to an end, led him to regard it as the main business of the botanist to know as many plants as possible — a heresy from which botany is only now beginning to escape. See Sachs's *History of Botany* (1875; trans. 1889); Carus's *Geschichte der Zoologie* (1872); Linne's own *Observations on Himself* (1823); and *Life* in Swedish by Fries (1903), and in German by Stöver (1792) and Malmsten (1879).

Linnean Society, a society of biologists founded in London, in 1788, by Sir J. E. Smith, who also purchased the books, MSS., and botanical collections of Linnaeus, and presented them to the society in 1828. The Linnean Society obtained a royal charter in 1802. Candidates for membership must be interested in botany or zoology. The society's rooms are at Burlington House, Piccadilly.

Linnell, JOHN (1792-1882), English painter, was born in London. His first teachers were West and Varley; but he entered the Academy school when he was fourteen, and in 1807 he exhibited at the Academy. He is remembered for his landscapes, but was also known as a portrait painter. See *Life* by Story (1892).

Linnet (*Linota cannabina*), a small song-bird of the finch family which is abundant in uncultivated regions throughout the British area. In the breeding plumage the male linnet has a crimson breast, and crimson tints on the forehead and crown. The wing and tail quills are black with white markings, the back

chestnut brown, and under surface dull white. The female and young have both upper and under surface streaked with dark brown. The food consists of oily seeds. Linnets have a naturally sweet song, and can also be taught the song of other species; hence they are favourite cage-birds.

Linnhe, LOCH, sea-loch, Argyll and Inverness shires, Scotland, extends 21 m. N.E. from the junction of the Firth of Lorne and the Sound of Mull to the Corran Narrows.

Linois, CHARLES ALEXANDRE LÉON DURAND, COMTE DE (1761-1848), French admiral, who commanded the *Atalante*, and fought the British *Sirfleur* (1794), but was captured. In 1801 he repulsed Saumarez in Algeciras Bay, but was defeated by him a few days later.

Linoleic Acid, $C_{18}H_{32}O_2$, is an unsaturated acid present as a glycerol ester in 'drying' oils such as linseed and poppy oil. It is prepared from linseed oil by saponification with caustic soda, purification and decomposition of the soap with acid, and is a yellow oil which becomes oxidized to a tough varnish on exposure to the air.

Linoleum, the principal kind of floorcloth now in use, consists essentially of a mixture of cork dust and mineral colouring matter, ground with oxidized linseed oil to a stiff homogeneous paste. The paste is spread by suitable machinery in a layer ranging from one-eighth to one-fourth of an inch thick on a stout canvas sheet, and the fabric hung in a warm and airy room to dry thoroughly. If a self-coloured linoleum is required, the product may be used in this condition; but patterns of various kinds are generally either printed on the surface with oil colours, or made in such a way, of pieces of the coloured

mixture, that the pattern goes right through the substance of the fabric. The best linoleum is made at Kirkcaldy, Fifeshire, the chief centre of the industry.

Linotype. See **TYPESETTING MACHINES.**

Linsangs are small carnivores allied to the genets, and are remarkable for the beauty of their colouring. Their bodies are long and slender, the limbs short, the fur soft and short, and the tail often very long. The ground-colour of the fur is some shade of tawny, beautifully marked with black. The species of the genus *Prionodon* are confined to the Oriental region, and the largest is *P. maculatus* of Burma, in which the head and body measure from 18 to 20 in., and the tail under 17 in. In W. Africa occurs *Poiana poensis*, the African linsang, in which the head and body measure 38 in., and the tail rather more. The linsangs are docile animals, readily tamed.

Linseed is the seed of the common flax, *Linum usitatissimum*. The seeds are brown, have an oval shape with sharp edges, and are chiefly valuable for the oil contained in the whitish interior. The outer part of the seed is mucilaginous, and an extract made with hot water is used as a demulcent ('linseed tea') in cases of cough and sore throat. The residue, from which the oil has been expressed, is ground as cattle food, and is often supplied for making poultices, although the crushed seed still containing the oil ('linseed meal') should be used for the latter purpose.

Linseed Oil is obtained by crushing and pressing the seeds of the flax ('cold-drawn oil'), a further quantity of an inferior quality being obtained under the action of heat. Good seeds contain up to 40 per cent. of oil; from 25 to 30 per cent. can be extracted by pressure. The princi-

pal ingredients in the oil are the glycerol esters of isolinolenic acid, $C_{18}H_{30}O_2$; its isomeric form, linolenic acid; linoleic acid, $C_{18}H_{30}O_2$; and small quantities of the fatty and oleic acids. The freshly-extracted cold-drawn oil is golden yellow, of sp. gr. about 0.93, and of slight odour or taste, the hot-pressed oil being far stronger in these latter respects. The chief value of linseed oil is in its drying properties—i.e. on exposure to air it becomes converted by oxidation into an elastic varnish-like solid, insoluble in most solvents. This property is greatly accentuated by heating the oil, 'boiled oil' being linseed oil that has been heated to from 130° to 200° C.; air, as a rule, being blown through the liquid, and metallic salts or 'driers' added to increase the rapidity of oxidation.

Linseed oil is largely used on this account, both in its raw and boiled state, as a vehicle in which to suspend pigments to make oil paints, and as a component of varnishes. The product of prolonged boiling is sticky, and is used for printing ink, whilst the elastic oxidation product of boiled oil is largely prepared as the binding material in the manufacture of linoleum.

Linseed oil is also used in pharmacy—'carron oil,' a valuable remedy for burns, being a mixture of equal parts of raw linseed oil and lime water.

Lint was formerly prepared by scraping the surface of linen, but is now manufactured by machinery. Lint is the proper medium for applying ointments and lotions. When used with the latter, the wet lint should be covered with oiled silk to prevent evaporation.

Linthwaite, par. and urb. dist., W. Riding, Yorkshire, England, 3 m. s.w. of Huddersfield: manufactures woollen goods. Pop. (1911) 8,982.

Linton. (1.) Town, Greene co., Indiana, U.S.A., 12 m. w. of Bloomfield; has coal mining. Pop. (1910) 5,906. (2.) EAST. See EAST LINTON.

Linton, Sir James Dromgoole (1840), English painter, born in London. He reorganized the Institute of Water-colour Painters under the name of the Royal Institute of Painters in Water Colours, and became its first president (1884), and considerably raised the status of water-colour painting in England. In 1885 he was knighted. His works in oil are mainly *genre* or historical, among the latter class being *The Marriage of the Duke of Albany*.

Linton, William James (1812-98), English wood-engraver and author, born in London. As an engraver his best work appeared in the *Illustrated London News*. In 1867 he removed to the United States, and settled at New Haven, Connecticut. An ardent Chartist, throughout life he zealously upheld republicanism and the rights of workmen. His principal publications include *Claribel and other Poems* (1863); *Some Practical Hints on Wood-engraving* (1879); *Life of Thomas Watson* (1879); *The Masters of Wood-engraving* (1890). He furnished the illustrations to his wife's work on *The Lake Country* (1864). See his autobiographical *Memoires* (1895).

Linum, a genus of mostly hardy plants, order Linaceæ, distinguished by the flowers having five sepals, five petals, and a ten-valved capsule. Among the British species are *L. perenne* and *L. augustifolium*, two perennial plants with narrow, tapering leaves, slender, wiry stems, and fragile blue flowers in summer; and *L. catharticum*, an annual plant, common in dry meadow land, bearing oblong leaves and panicles of small white flowers in

summer. Garden species include *L. Narbonense*, blue, or sometimes white; *L. tauricum*, a small evergreen shrub bearing panicles of yellow flowers in late summer; *L. alpinum*, a small plant bearing large blue flowers in July; and *L. grandiflorum*, an African species with rose-coloured flowers. *L. usitatissimum*, the common flax of commerce, belongs to this genus.

Linus, in Greek legend, was the personification of a dirge or lamentation. He was said to have been the son of Apollo by a Muse; his mother exposed him after his birth; he was reared by some shepherds, but was afterwards torn in pieces by dogs. A Theban version of the story tells that Apollo slew Linus for venturing to compete with him in music. Apollodorus and Pausanias are the ancient authorities.

Linwood, vil., Renfrewshire, Scotland, 3 m. w. of Paisley; has cotton mills and coal mines. Pop. 1,200.

Linz, or Lintz (Rom. *Lentia*), tn., port, and episc. see of Austria, chief tn. of prov. Upper Austria, stands on r. bk. of the Danube, 100 m. w. of Vienna. Linz has iron, boat-building, cotton, brewing, tobacco, and leather industries, and manufactures carpets. Pop. (1911) 67,859.

Lion (*Felis leo*). The lion, though believed by some authorities to be less powerful than the tiger, is certainly the handsomest and most imposing of the carnivora. Much of the impression of size and strength which the animal gives is due to the flowing mane, present in some though not all adult males, and characteristic of the species. Another characteristic is the tuft of long hair at the extremity of the tail, in the middle of which is a curious horny appendage, called the 'thorn.' The colour is uniform and tawny, showing that the lion

was originally a desert animal, but the young exhibit traces of the stripes so frequent in the cat tribe. As in the other large cats of the Old World, the pupil of the eye is round. An adult male reaches a length of about ten feet, while the females are a foot shorter. The mane of the male does not appear till the animal is about three years old.

The lion was formerly much more widely distributed than at present. It now occurs throughout the continent of Africa, though it has been exterminated in the more civilized regions; in Asia it extends from Mesopotamia and S. Persia to India, but is nearly exterminated in the last-named country. There is apparently only one species of lion throughout this extensive range, although there is considerable variation in the length and colour of the mane. In habit the animals are purely nocturnal, and sleep during the day in reeds or among bushes. They never climb trees. They are sometimes found solitary, sometimes in pairs, and in some districts in small troops. Mating seems to be for life, and from two to six cubs are produced at birth—in captivity at least. They breed readily in captivity, but in certain places only, as in the Zoological Gardens in Dublin, but not in London, and are then much less fierce than tigers. The natural food of the lion appears to be ungulates, such as antelopes, zebras, buffaloes, giraffes, pigs, rhinoceros, and so on; but they will also eat carrion, and even small rodents, when old and decrepit. For accounts of lion-hunting in Africa reference should be made to the works of Selous, Baker, Roosevelt, and others.

Lion of Lucerne. See LUCERNE.

Lion of St. Mark. See VENICE.

Lions, GULF OF, an arm of the Mediterranean, extending from Cape Creus on the coast of Spain to Hyères Is. on the coast of France. Numerous sand-banks hinder its navigation. The rivers Rhône, Orb, Aude, and Têt empty into it, and the towns of Marseilles, Cetœ, and Port Vendrœ are on its shores. Its name is derived from the raging and roaring of its waves. The spelling 'Lyons' is erroneous.

Liotard, JEAN ETIENNE (1702-89), Swiss painter, born in Geneva. He worked in enamel and pastel, and painted miniatures. Sir Everard Fawkener brought him to England, where he painted many portraits. His famous pastel, *The Vienna Chocolate Girl*, is in the Dresden gallery. *La Belle Lyonnaise* is in Amsterdam. See *Life* by Humbert, Revilliod, and Tilanus (1897).

Lipa, pueblo, Luzon I., Philippines, prov. of and 15 m. N.N.E. of Batangas. The district produces sugar, cacao, tobacco, and indigo. Pop. 40,000.

Lipari (or *ÆOLIAN*) Islands (anc. *Aeolia* or *Vulcania*), volcanic group in Mediterranean, off N. coast of Sicily, prov. of and N.W. of Messina, consists of seven large and numerous small islands. The most important is Lipari. The next in size are Vulcano, Stromboli, Salina, Filicudi, Alicudi, and Panaria. Stromboli (3,040 ft.) is constantly active; Vulcano (1,017) is intermittent. Lipari, the chief town of the islands, stands on the E. side of Lipari I., which is 5 m. long and 4 m. broad, and produces grapes, figs, olives, corn, wine, and currants. The town exports pumice stone, sulphur, fish, and malmsey wine. Total area, 45 sq. m. Pop.—tn., 12,000; group, 21,000.

Liparis, a genus of orchids of wide distribution. The flowers are usually small and dull-col-

oured. Most of the species require stove treatment; but *L. Loeselii*, with yellow flowers, and *L. liliifolia*, with dull purple flowers, two North American species, are hardy in this country.

Liparite, a name given to a group of quartzose igneous rocks, occurring as lavas, from their abundance in the Lipari Is. See RHYOLITE.

Lipetsk, tn., Tambov gov., Central Russia, 90 m. w. of Tambov city, cap. of dist., at confluence of Lipovka with Lyesnoi-Voronej; has sugar works, iron foundries, tanneries, brick-kilns. There are chalybeate mineral springs. Pop. 21,000.

Lipine, tn., Prussia, in Silesia, 2 m. w.n.w. of Königshütte; has coal mines, zinc works, and manufactures fire-clay goods and chemicals. Pop. (1910) 18,171.

Lipnik, comm., Austria, in Galicia, 2 m. e. of Biala. Pop. (1911) 10,701.

Lipogram (Gr. *leipo*, 'I leave'), a form of literary trifling, wherein the author excludes some letter or letters of the alphabet throughout the composition. The most gigantic lipograms on record are two Greek poems produced by Tryphiodorus—the one a kind of *Iliad* in twenty-four books, each excluding absolutely the letter of the alphabet marking its own number; the other an *Odyssey*, composed on the same principles. Gregorio Leti also wrote a discourse called *The Exiled R.*, because the letter *r* was omitted throughout; Rückert wrote German poems excluding *r*; and Lope de Vega, the Spanish dramatist, wrote five novels, each of which avoids some particular vowel.

Lippa, comm. and health resort, prov. Temes, Hungary, on Maros R., 22 m. e.e. of Arad; has important cattle fairs and manufactures of pottery. Pop. 7,500.

Lippe (sometimes called LIPPE-DETMOLD), sovereign principality

of Germany, N.E. of Westphalia, between the Teutoburger Forest and the Weser R. Area, 469 sq. m.; pop. (1910) 150,749, nearly all Protestants. The country is wellwooded and hilly, over 25 per cent. being covered with forests. Over 50 per cent. of the area is cultivated, mostly in small holdings. Starch, salt, tobacco, bricks, and beer are manufactured. Salzuflen is noted for its brine springs. Cap. Detmold. Pop. (1910) 14,295. Lippe has one vote in the Imperial Federal Council, and one representative in the Imperial Diet. The dynasty dates from the middle of the 10th century, the status of a principality of the empire from 1720.

Lippe-Schaumburg. See SCHAU MBURG-LIPPE.

Lippi, FRA FILIPPO—known as 'Fra Lippo Lippi'—(1412-69), celebrated Florentine painter, was placed while very young in a Carmelite monastery, which he left in 1432 with no pronounced ecclesiastical convictions, but carrying away an artistic power largely due to his study of the works of Masaccio. He became chaplain to the convent of San Giovannino at Florence (1432), and prior of Santa Margherita at Prato (1456). It was here that he met, according to Vasari, the beautiful Lucrezia Buti, afterwards the mother of his son Filippino. One of the greatest painters of his age, Fra Lippo Lippi combined a wealth of colouring and an unerring composition peculiarly his own. Among his great works are the frescoes dealing with the lives of St. Stephen and St. John the Baptist in the cathedral at Prato, and Madonnas to be seen in several of the great continental collections. See *Fra Filippo Lippi* by Strutt (1901) and by Supino (1902).

Lippi, FRA FILIPPINO (1460-1504), painter, son of the preceding, studied under Fra Dia-

mante. With some characteristic differences, Filippino's work is in no sense behind that of his father. Among his greatest works are frescoes in the Brancacci chapel at Florence; an altar-piece in Santo Spirito, and another now in the Uffizi Gallery; the *Vision of St. Francis*, in the Badia at Florence; and the *Marriage of St. Catherine*, in San Domenico, Bologna.

Lippia, a genus of shrubs, order Verbenaceæ, having small, solitary flowers in the axils of the bracts. The best-known species is *L. citriodora*, the lemon plant, or scented verbena.

Lippincott, JOSHUA BALLINGER (1813-86), American publisher, born in New Jersey of Quaker parentage, and founded the great publishing firm of J. B. Lippincott and Co. (1836), which became in 1850 the head of the book trade in Philadelphia. He established *Lippincott's Magazine* and *The Medical Times*.

Lippmann, GABRIEL (1845), French physicist, born in Luxembourg. In 1883 he was appointed professor of mathematical, and in 1886 of experimental, physics at the Sorbonne in Paris. His principal work has been in investigating the effect of electro-motive force on capillarity, to which we owe the capillary electrometer; in inventing the interference method of colour photography, and in determining electrical units. In 1908 he was awarded the Nobel prize for physics. His works include *Cours de Thermodynamique* (1886) and *Cours d'Acoustique et d'Optique* (1888).

Lippe-springe, wat.-pl., Prussia, in Westphalia, 10 m. s. by W. of Detmold. Its mineral springs have a temperature of 70° F. The visitors number some 6,000 annually. Pop. (1910) 4,071.

Lippstadt, tn., Westphalia, Prussia, on Lippe R., 40 m. E.N.E.

of Dortmund; manufactures tobacco, brandy, ropes, and brushes, and has iron-wire works. Pop. (1910) 16,395.

Lipsius, RICHARD ADELBERT (1830-92), German theologian, was born at Gera, and became professor successively at Leipzig (1859), Vienna (1861), Kiel (1865), and Jena (1871), where he also acted as *Geheimer Kirchenrath*. He was joint-author of the *Handkommentar zum Neuen Testamente* (1891), to which he contributed Galatians, Romans, and Philippians. Other important publications by Lipsius are *The Ignatian Letters* (1859), *Gnosticismus* (1860), *Lehrbuch der Evangelisch-protestantischen Dogmatik* (1876), *Philosophie und Religion* (1885), *Die Apocryphen Apostelgeschichten und Apostellegenden* (1883-1887).

Lipton, SIR THOMAS JOHNSTONE (1850), British merchant, was born in Glasgow of Irish parentage. In 1896 his business was converted into a limited liability company, with a capital of £2,500,000, of which he is the chairman. In 1898 he received the honour of knighthood, and further marks of the royal favour were bestowed upon him in 1901, when he was made a K.C.V.O.; and in 1902, when he was created a baronet. Sir Thomas Lipton has made three unsuccessful attempts, with *Shamrock I.*, *Shamrock II.*, and *Shamrock III.*, to wrest the America Cup from the New York Yachting Club. See AMERICA CUP.

Liquation describes the separation of the constituents of an alloy when cooling down from the molten state. Thus a mixture of lead and zinc almost completely separates into its two components on solidifying undisturbed, a similar though less complete action taking place with other metallic mixtures. Liquation plays a very important

part in determining the composition and properties of commercial alloys. An ingot of copper and silver alloy may have a distinctly different composition in different parts, and thus be unsuitable for coinage; whilst specimens of steel, iron, and other metals may have quite different strengths through local liquation taking place to a greater or less extent, though in the mass they may have the same percentage composition. Liquation is employed to separate some metallic mixtures by a sort of fractional melting, the more fusible component running off first. It is used in this way to separate native bismuth from the non-metallic impurities with which it is mixed, and to purify tin and other substances, the mixture being cautiously heated on a sloping hearth or in an inclined tube. See EUTECTIC.

Liquefaction of Gases. See GASES AND VAPOURS.

Liqueurs are strongly alcoholic beverages prepared from grain spirit, rectified spirit, or other form of alcohol, flavoured with various fruit or herb extracts, usually sweetened and coloured, and sometimes distilled. The more important include absinthe, aniseed cordial, benedictine, chartreuse, clove cordial, trappistine, curaçoa, kummel, maraschino, kirschwasser, noyau, crème de menthe, vermouth, sloe gin, and cherry brandy.

Liquid is that state of matter in which the particles can be made to flow over each other by the least assignable force, if sufficient time is allowed, and which also possesses a definite volume—i.e. will only occupy a portion of the vessel containing it equal to its own volume—thus differing from a gas, which spreads itself out evenly throughout any volume that may be free to it.

These features result in certain characteristic properties of liquids. Thus the free surface—i.e. the surface not in contact with, or in the immediate neighbourhood of, the vessel—is level and horizontal if the liquid is at rest, the shape and ramifications of the vessel into tubes and the like not affecting the height to which it rises. Another consequence is that the pressure under a liquid is exerted equally in all directions, is also independent of the vessel, and is proportional only to the density of the liquid and to the vertical height from the surface under pressure to the free surface of the liquid.

The phenomena of flotation and its manifold applications also result from the same properties—a body immersed in a liquid experiencing a buoying-up force equal to the weight of liquid it displaces. Liquids, with regard to volume, are perfectly elastic, though under ordinary circumstances highly incompressible: thus water only diminishes one-millionth of its bulk for an increase of one atmosphere pressure—a fact made use of in hydraulic machinery. The compressibility increases with the temperature, until in the neighbourhood of the critical point it approaches that of a gas. Although much more difficult to observe, liquids will also withstand tensile stress, the coefficient of volume elasticity for alcohol having been shown by Worthington to be the same for tensile as for compressive stresses. Liquids are, in general, isotropic—i.e. they exhibit identical properties in every direction—though recently certain 'liquid crystals' have been described which have differences in optical behaviour according as they are viewed.

Besides the properties exhibited by liquids in the mass, there are many important features due to

their minute structure, of which those connected with the surface tension, the viscosity, and the phenomena of diffusion and osmose, are the most important. The surface tension is a molecular action occurring in the very thinnest imaginable outside layer of the liquid, and having the same effect as if the liquid were enclosed in an elastic skin which is ever trying to make itself smaller, with a force which, in the case of water and mercury, at 0° C. is equal to 75·8, and 527·2 dynes per centimetre of length of the film, respectively. Surface tension is the cause of very many interesting and diverse actions, such as the capillary rise of liquids in fine tubes, the formation of drops and soap bubbles, the meniscus-shaped surface of liquids, the characteristic appearance of jets of liquids, the motion together or apart of scraps of floating matter, and the calming of rough water by oil.

The viscosity of liquids represents the molecular friction, and is the resistance that one part of the liquid exhibits in flowing past another, which, though it can be overcome by the least assignable force, as already stated, takes very varying times in the process. Thus though pitch, which may be looked upon as an extreme case of a viscous liquid, may take years to flow through a funnel, the same flow may be accomplished by an oil in minutes, and by water and alcohol in seconds. Viscosity varies much with temperature, the coefficient, which is determined by the volume v that flows through a capillary tube of radius r and length l , being = $\frac{hr^4dg}{8v}$, if d is

the density of the liquid, h the height of its column, and g the acceleration of gravity. The coefficient for water at 0° C. = 0·0178, at 10° C. = 0·0131; whilst for alcohol at 10° C. = 0·0154, for

mercury at 17·2° C. = 0·016, and for glycerin at 2·8° C. = 42·18.

Viscosity is utilized in lubrication by oils, which form a layer between the rubbing surfaces, and if sufficiently viscous, with regard to the pressure, to resist being squeezed out, reduces the friction from that obtaining between two solids to the much smaller friction between the liquid particles.

The diffusion and osmose of liquids, or power that a particle of a liquid has of transferring itself from one point to another in the liquid, even against gravity or the rough membranes, are closely allied effects, explainable on the theory that the molecules of a liquid, like those of a gas, are in motion, though of a more restricted character. On this account the diffusion of liquids is very much slower than that of gases, but differs for different substances in a somewhat similar manner. Different substances diffuse in solution at rates that are slower the heavier and more complex the molecules. This difference is made use of to separate substances with molecules of different size in the process of dialysis, in which glucolike materials, such as starch, albumin, or silicic acid, are separable from sugar, salts, and the like, by diffusing the mixed solution through a parchment paper diaphragm, the larger molecules being retained.

Osmose is a similar process, but differs in that the membrane, such as copper ferrocyanide supported in porcelain, is such that only solvent molecules pass, and not those of the dissolved substance or 'solute.' If, then, a solution is separated from the pure solvent by such a membrane, the solvent passes through to the solution, and a pressure is set up which is found in the case of dilute solutions to be equal to that which the solute would exert if distributed throughout the same

space in the state of gas. The action of osmosis, no doubt, plays a very important part in the physiological processes of both animals and plants.

The phenomena of the change of liquid to solid, and liquid to gas, and conversely, are described in the articles on FREEZING, EVAPORATION, and GASES AND VAPOURS; while the special properties of liquids when in motion are included in the article on HYDROKINETICS. See also HYDROSTATICS, CAPILLARITY, DIFFUSION, DIALYSIS, OSMOSIS, and KINETICS.

Liquidambar, a genus of deciduous trees, order Hamamelidaceæ. They bear catkins of monocious flowers, and the leaves and stems are very fragrant from the resin they contain. The commonest species is *L. styraciflua*, the sweet gum, a very decorative North American tree which bears greenish-yellow flowers and palmately-lobed leaves.

Liquidated Damages. See DAMAGES.

Liquidation. See BANKRUPTCY and COMPANY.

Liquorice, the root or underground stem of the plant *Glycyrrhiza glabra*. As it occurs in commerce the root is usually in cylindrical-branched pieces—tough, and brown in colour. It is sweet and mucilaginous to the taste. The sweet taste is due to a non-fermentable substance called glycyrrhizine. The extract obtained by macerating liquorice root in water, and subsequently evaporating to a suitable consistency, is used in pharmacy, chiefly as a sweet demulcent.

Liquor Laws. See LICENCE AND LICENSING LAWS and LOCAL OPTION.

Lira (pl. *lire*), an Italian silver coin. The *lira Italiana*, or *lira nuova*, is equal in value to the French franc, and is divided into 100 centesimi.

Liria (anc. *Edeta*), tn., prov. Valencia, Spain, on l. bk. of Guadalaviar, 15 m. N.W. of Valencia. Vines, olives, and esparto grass are cultivated. There are mineral springs. Pop. 9,000.

Liriocendron. See TULIP TREE.

Lisbon (Port. *Lisboa*; anc. *Olipo*, and in later Roman times *Felicitas Julia*), cap. of Portugal, and of prov. of Estremadura. It is beautifully situated, in a narrow valley flanked by hills running inland at right angles with the river, on the N. bk. of the Tagus, 12 m. from its mouth. The harbour, widening out in front of the city into an extensive, almost landlocked bay, is capable of sheltering the largest vessels. The highest point on the E. side of the valley is crowned by the ancient and now obsolete fortress of St. George (*São Jorge*); the cathedral (founded in 1150) is on a slightly lower point adjacent; the custom house, arsenals, ship-yards, etc., are on the river bank beneath. The public offices and library are in the Praça do Comércio, where also, before the great earthquake of 1755, the royal palace stood facing the Tagus. Parliament meets in the Palacio das Cortes, a 16th-century Benedictine convent. On the outer slopes of the hills on the W. side of the valley, towards the Atlantic and the suburb of Belem, many of the best houses are now built, including the royal palace of Necessidades. In 1910 the exports through Lisbon were of the value of £2,613,950, and the imports at £7,124,160. The chief imports are grain, sugar, cotton, coal, petroleum, and timber; the exports, chiefly cork, copper, wine, olive oil, salt, fruits, and fish. There is also a very large re-export trade in cocoa sent to Lisbon from the Portuguese

islands of São Thomé and Príncipe. About one-third of the shipping of the port is British. Pop. 357,000. See Inchbold's *Lisbon and Cintra* (1907).

Lisburn, tn., Co. Antrim, Ireland, on the Lagan, 8 m. s.w. of Belfast, on the Great Northern Ry. In 1662 Christ Church was constituted the cathedral for the diocese of Down and Connor. Manufactures damask and other linens, and has bleaching and dye works. Pop. (1911) 12,172.

Lisanthus, a genus of plants belonging to the order Gentianaceæ. Among the species are *L. pulcher*, which is evergreen, and bears terminal cymes of pendulous, funnel-shaped, scarlet flowers in late summer; and *L. princeps*, also evergreen and scarlet-flowering.

Lisieux (anc. *Norioragus Lexioriorum*), tn., dep. Calvados, France, on the Touques, at its confluence with the Orbiquet, 20 m. s. of Honfleur; manufactures coarse linens, woollens, and flannels. The cathedral of St. Pierre (1045-1233) is the most interesting Gothic church in Normandy. Pop. 16,200.

Liskeard, manc. bor. and mrkt. tn., Cornwall, England, 11 m. e. by s. of Bodmin, was formerly a tin-mining centre. Industries include woollen and leather goods, brewing, saw-milling, iron foundries, and slate quarrying. There are large livestock markets. Liskeard was one of the four Cornish 'coinage towns.' Pop. (1911) 4,371.

L'isle-Adam. See VILLIERS DE L'ISLE ADAM.

L'isle, ALAIN DE, or ALANUS AB INSULIS (c. 1114-1202), philosopher and theologian, born at Lille; was the author of a poem, *Anticlaudianus*, treating of moral, science, and art.

Lismore. (1.) Island in par. of Lismore and Appin, Argyllshire,

8 m. N.N.W. of Oban, 11 m. long and 1½ m. broad. The inhabitants are engaged in agriculture and fishing. It has remains of two Scandinavian forts, Coffin and Tirluir, and the choir of the cathedral of the pre-reformation diocese of Lismore (1236), now used as a parish church. There is a lighthouse at Port Romney (1833). Pop. 400. (2.) Town, Co. Waterford, Ireland, on the Blackwater, 15 m. w.n.w. of Dungarvan. A monastery and bishopric were founded here by St. Carthagh in the 7th century. Pop. 1,600. (3.) Township at head of Richmond R., 520 m. n. of Sydney, New South Wales. It is the chief town of the N. coast district. There are large sugar-refining works, sawmills, and creameries. Pop. 6,300.

Lissa. (1.) Island, Dalmatian coast, Austria. Area, 40 sq. m. Pop. (1911) 10,107. It lies just N. of 43° N. lat., and possesses a good harbour at its chief town, Lissa; pop. (1911) 5,159. Wine is the chief product. Off this island the British defeated the Franco-Venetian fleet in 1811, and here was fought (1866) the first action between squadrons of ironclads, when the Austrian fleet defeated the Italian fleet. (2.) Town, Posen, Prussia, 25 m. N.E. of Glogau; manufactures machinery, shoes, cloth, wines, and cigars. Pop. (1910) 17,156.

Lissochilus, a genus of tropical terrestrial orchids with simple racemes of usually brilliant flowers. Among the species are *L. Krebsii*, a native of Natal, having green sepals with purple blotches, and yellow petals; *L. speciosus*, with abundance of yellow flowers in summer; and *L. Horsfallii*, bearing flowers with brown sepals and large white petals flushed with pink.

Lissone, tn., Italy, in Lombardy, 10 m. n. of Milan. Pop. (comm.) 7,894.

Lister, JOSEPH, FIRST BARON (1827), English surgeon, born at Upton, Essex. After being a surgeon in Edinburgh for several years, Lister was appointed to the chair of surgery in Glasgow University (1860), to that of clinical surgery in Edinburgh University (1869), and to the chair of clinical surgery, King's College, London (1877), from which he retired in 1893. Influenced by Pasteur's discoveries of the origin of fermentation and putrefaction, Lister began his far-reaching and important work on the cause and prevention of septic infection of wounds, which speedily led to his employing antiseptics in all surgical operations. The immediate and definite success of the Listerian treatment soon led to its adoption by surgeons everywhere. Lord Lister was president of the British Association (1896), and of the Royal Society from 1895 to 1900. In 1883 he was created a baronet, and in 1897 was raised to the peerage. In addition to many important papers in scientific journals, he has published *On the Effects of the Antiseptic Treatment upon the Salubrity of a Surgical Hospital* (1870), and *A Contribution to the Germ Theory of Putrefaction and other Fermentative Changes* (1875). See Turner's *Lord Lister and Surgery* (1899).

Liston, ROBERT (1794–1847), Scottish surgeon, born at Ecclemachan, Linlithgowshire. From 1818 to 1828 he worked in Edinburgh as a teacher of anatomy and an operating surgeon, and in 1835 became professor of clinical surgery in University College, London. His principal works are *Elements of Surgery* (1831–2) and *Practical Surgery* (1837).

Listowel. (1.) Par. and tn., N. Co. Kerry, Ireland, 15 m. N.N.E. of Tralee. Pop. 4,300. (2.) Town,

Perth co., Ontario, Canada, 25 m. N. of Stratford; manufactures lumber, iron, and woollens. Pop. 2,700.

Liszt, FRANZ (1811–86), Hungarian pianist and composer, was born at Raiding. As a child he possessed such extraordinary musical gifts that, when nine years of age, the expense of his musical education for six years was undertaken by Prince Esterhazy (the employer of Liszt's father) and several other Hungarian noblemen. After studying for some time under Czerny and Salieri at Vienna, Liszt went to Paris, but was there refused admission to the Conservatoire by Cherubini on the ground that he was a foreigner. From 1839 to 1847 he was almost constantly travelling, giving concerts in nearly every European country, and was everywhere received with enthusiasm. While his fame as a virtuoso was at its height he retired (1849) to become conductor of the Court Theatre at Weimar. He resigned in 1861, and during the remainder of his life, spent alternately in Budapest, Weimar, and Rome, was known as the Abbé Liszt, having been permitted to take minor orders in the Church of Rome. He was the creator of the symphonic poem; and his *Hungarian Rhapsodies* for the piano, also his transcriptions of orchestral compositions—especially the later ones—are still unrivalled. His literary works are considerable, and include writings on Chopin, Franz, Wagner, and on the music of the Gypsies. See Wohl's *Recollections of Liszt* (1888), and Lives by Ramann (1890–4), and Hahn Pochhammer, and Volbach (1898); also Liszt's *Letters* (trans. 1894), and *Correspondence between Wagner and Liszt* (trans. 1888).

Li-tang, tn. in Sze-chuen, China, in about 30° N. and 105° E. on the route to Tibet.

Litany (Gr. *litaneia*, 'a supplication'). Litanies date from the period when Christianity had so far triumphed as to be able to offer to the public forms of prayer which might supersede the petitions hitherto offered to the heathen gods. Such litanies were sung at Rome in the time of St. Gregory and St. Augustine. St. Gregory of Tours describes the litanies at Vienne in Gaul, instituted by Bishop Mamertus in 477, after an earthquake. Processional prayers suitable to special occasions were early called 'rogations.' They must have been practised in Britain for many years previous to the Council of Clovesho (747), which refers to their continuance 'according to the custom of our ancestors.' At first litanies were said only on stated days, or as notable happenings demanded, and they were associated with penitential fasting. But as early as the close of the 5th century there are signs of their more general use. In the East they seem to have originated in the action of St. Chrysostom, who introduced processions with responses into Constantinople (398). As early as the 4th century responsorial prayers were a feature of all Eastern worship, even in the eucharist (*Apost. Const.*, viii. 6). In the West the term litany stood at first both for a penitential procession and for a service of responsorial prayer with the refrain of '*Kyrie eleison.*' The two soon coalesced, and litany meant a form of prayer in dialogue, whether said in church or in procession, or whether used on particular occasions or as part of the ordinary worship. The Roman Catholic form of litany was early adopted in England, and continued till the reformation. The Litany of the Book of Common Prayer was compiled in 1544. It was published in the Primer of

Henry VIII. (1545) as 'The Litany and Suffrages,' and is called 'this common prayer of procession.' It was first sung in St. Paul's Cathedral on St. Luke's Day, 1545. It is appointed for 'Sundays, Wednesdays, and Fridays, and at other times when it shall be commanded by the ordinary,' and is either said or sung immediately after morning prayer, or matins. See Procter and Frere's *New History of the Book of Common Prayer* (2nd ed. 1902); Pullan's *The Book of Common Prayer* (3rd ed. 1901); Blunt's *The Annotated Book of Common Prayer* (new ed. 1903).

Litchfield, tn., Montgomery co., Illinois, U.S.A., 50 m. N.N.E. of St. Louis. Coal, gas, and oil are obtained in the vicinity. Pop. (1910) 5,971.

Literary Forgery. There is scarcely a sphere of literary achievement in which the literary forger has not made his mark. The following is a list of the principal literary forgers:—(1.) Annius of Viterbo (b. 1432), who produced poems which he ascribed to Archilochus, and histories which he claimed for Fabius Pictor. (2.) George Psalmanazar, who published his fabricated description of Formosa in 1704. (3.) James Macpherson, who in 1762-63 manufactured 'Poems' in the name of 'Ossian.' (4.) Thomas Chatterton, who in 1769 deceived Walpole, Bryant, and other scholars with writings which he attributed to Thomas Rowley, a monk of Bristol. (5.) Samuel William Henry Ireland, who in 1796 forged a 'new play by Shakespeare,' entitled *Vortigern* (1769). (6.) The undiscovered writer of the spurious Shelley 'Letters' published by Moxon (1852). (7.) John Payne Collier, who executed the 'Perkins Folio' emendations and other Shakespearean forgeries (1849-53). (8.) Alcibiades Simonides, who tried

to impose upon the British Museum with documents said to have been written by Homer, Belisarius, Aristotle, Alcibiades, and others. (9.) Dr. Shapira, who in 1883 professed to have received from an Arab sheik a manuscript of Deuteronomy written on sheepskin in a character almost identical with that of the Moabite stone. (10.) Richard Piggott, who forged the Parnell letters (1886). (11.) Alexander Howland Smith, known as 'Antique Smith,' who was convicted at Edinburgh (1893) for the forgery of an enormous number of historical and other documents. See *Literary Forgeries* by J. A. Farrer (1907).

Litharge, lead monoxide (PbO), occurs native as lead ochre, but is chiefly obtained by the oxidation of lead in the process of cupellation, the product of oxidation at lower temperatures being known as *massicot*. The fused litharge is ground, forming an insoluble yellowish to reddish powder of sp. gr. about 9. Litharge is used as a component of flint glass, to glaze earthenware, and in the preparation of the compounds of lead.

Litherland, par. and mkt. tn., Lancashire, England, 4 m. N. of Liverpool, of which it is a residential suburb; manufactures matches. Pop. (1911) 14,796.

Lithgow, tnship., dist. of Hartley, 70 m. w.n.w. of Sydney, New South Wales, in a valley of the Blue Mts.; has collieries, breweries, potteries, ironworks, sawmills, and brickmaking works in the vicinity. Pop. (1910) 8,260.

Litingow, WILLIAM (1582-1645), Scottish traveller, born at Lanark, left his native country about 1610, and travelled through Italy, the Levant, and Egypt, making, on a second tour, an exploration of N. Africa. His third journey saw him in the hands of Spanish inquisitors at Malaga, and he was only rescued

by the interference of the English consul (1621). In a later journey he was present at the siege of Breda, of which he published an account (1637). His *Totall Discourse of the Rare Aduentures and Painful Peregrinations of long Nineteene Yeares Travayles* (1632; new ed. 1906) is of great interest.

Lithium (Li , 7.03) is an element of the alkali-metal group. It is widely distributed in combination, occurring in many minerals, waters, and soils—the chief sources being its silicate, which is found as a mineral, *lepidolite*. Lithium is obtained by the electrolysis of its fused chloride, and is a soft white metal (m.p. 186° C.), the lightest solid known (sp. gr. .59). Lithium carbonate and citrate are used in medicine in cases of gout, gravel, and other ailments, to remove uric acid, lithium urate being a soluble salt.

Lithography. See PRINTING.
Lithology. See PETROLOGY.

Lithomarge, a compact variety of kaolin or of clay, soft, unctuous, and friable. It is usually white or gray, and is found in Cornwall, Germany, America, and elsewhere.

Lithospermum, a genus of hardy herbaceous plants, order Boraginaceæ. The flowers are borne in bracteated cymes, the corolla being funnel-shaped. *L. prostratum* is a beautiful, trailing, evergreen rock plant, bearing deep blue gentian-like flowers in summer; *L. Gastoni* bears large blue flowers in terminal clusters; *L. purpureo-carulicum* is a native of Britain.

Lithotomy (Gr. *lithos*, 'a stone'; *tome*, 'cutting') and **LITHOTRITY** (Gr. *tribein*, 'to crush or grind') are methods for the removal of calculus or stone from the bladder. Lithotomy involves cutting, and the breaking up of the calculus by an instrument called a lithotrile intro-

duced through the wound, while by lithotripsy the stone is crushed into fragments small enough to be removed through the urethra. Three operations are in vogue for the performance of lithotomy. In two of these the incision is made in the perineum; in the third or suprapubic operation, that part of the bladder wall which is not covered by peritoneum is opened above the pubes.

Lithuania (*Litva*), region of N.W. Russia, lying between $57^{\circ} 30'$ and $57^{\circ} 45'$ N., and between $20^{\circ} 50'$ and $25^{\circ} 20'$ E. The Lithuanian country proper is the land between the Lower Dwina and the Niemen, but the name of Lithuania has been applied to a much larger region, extending far towards the Black Sea. Since 1840 the use of the term has been forbidden in Russian official language, but it is still commonly employed to include Grodno and Vilna governments *par excellence*, and sometimes those of Kovno and Vitebsk as well. These four have an area of 63,578 sq. m., and a population of about 7,400,000.

From the 10th century the Lithuanians have been divided into the three chief branches of (1) Lithuanians proper, (2) Letts or Latvia, (3) Prussians. The Prussians have always apparently been confined to the Baltic coast near the Lower Vistula, chiefly to the east of that river; they have been wholly absorbed by Germanic influences. The Letts, pushed towards the north, have been largely mingled with Livonians and Estonians. The Lithuanians proper, after founding an independent power of vast extent, joined more and more closely with the Poles, and fell under the Russian sway at the dissolution of the Polish state. The Lithuanian tongue has great affinities with Slavonic, but cannot be considered a Slav language;

it is by far the most archaic of all living Aryan tongues. Before the union with Poland (begun in 1386 and consummated in 1399), the Lithuanians were either pagan (the vast majority were heathen up to 1386) or Greek Orthodox. The Polish connection established the ascendancy of Roman Catholicism.

Since absorption by Russia many Lithuanians have returned to the Greek Church. Kociusko was a Lithuanian, and the province of Vilna was a main centre of the Polish insurrection of 1863, crushed in Lithuania by General Muraviev.

Litfa, tn., Podolia prov., S.W. Russia, cap. of dist., 75 m. N.E. of Kamenets-Podolsk, on the Zgar. Pop. 10,000.

Litmus is a colouring matter obtained from certain lichens, *Roccella tinctoria* (S. Africa and Chile) and *Leucanora tartarea* (Europe). It is prepared by fermenting a mixture of the lichen with potassium carbonate. The product is mixed with gypsum, moulded into cubes, and dried. Litmus is used as an indicator in acidimetry, being turned red by acids and blue by alkalies.

Litre is a French metric measure of capacity both dry and liquid. It contains one cubic decimetre—i.e. the volume of a cube with sides 10 centimetres long—and is equal to 1.76 pints. **Litre** is the Low Lat. *litra*, from Gr. *litra* = a weight, a pound.

Littleborough, tn., Middleton div., Lancashire, England, 3 m. N.E. of Rochdale, of which it is practically a suburb. It is situated in a mining district, and manufactures cottons and woolens. Pop. (1911) 11,706.

Little Colorado, riv. of the s.w. part of the United States, a branch of the Colorado of the west. It rises in the western part of New Mexico, and flows w. and N.W. to its junction with

the Colorado. Most of its course is over a desert plateau, in which, near its mouth, it has cut a deep cañon. Length, 277 m.

Little Egypt, or frequently EGYPT, was the popular name of a country recognized in Europe during the 15th and 16th centuries as the place of origin of the wandering people who consequently became known as Egyptians, or, in the abbreviated English and Spanish forms, Gypsies and Gitanoa. It has been shown by Grellmann that the Turkish emperor in 1652 (Achmet IV.) included among his titles that of 'King of the Greater and Lesser Egypt.' Mazaria, a Byzantine author, writing about the year 1416, says that at that date the Peloponnesus was inhabited by 'seven principal nations,' of whom one was that of the 'Egyptians'—that name then having the significance of 'Gypsies,' and not denoting the natives of Egypt. It is therefore probable that there were Gypsies in Epirus, otherwise 'Little Egypt,' at that date. The acceptance of Epirus as the 'Little Egypt' understood by various European nations in the 15th century is fully in accordance with the assertion made by the contemporary Gypsies that they had been driven from their country by the Turks. See Grellmann's *Dissertation* (Raper's English trans., 1787); Richard Pischel in *Journal Gypsy Lore Society* (new series, April 1909, p. 297; also pp. 72-73 of July 1909 of same).

Little Englander, a political nickname applied by imperialists to those whom they conceive to be opposed to the maintenance and further extension of the British empire.

Little Falls. (1.) City, Herkimer co., New York, U.S.A., on the Mohawk R., 20 m. E. of Utica. Good water-power has materially assisted in the manufacturing development of the city. Bicy-

cles, knitted goods, dairy appliances, paper, and leather are made. Pop. (1910) 12,273. (2.) City and co. seat, Morrison co., Minnesota, U.S.A., on the Mississippi, 86 m. N.N.W. of Minneapolis. Pop. (1910) 6,078.

Little Fish Bay. See MOSAMEDES.

Littleham, par. and vil., Devonshire, England, 2 m. E. of Exmouth. Pop. 5,800.

Littlehampton, par., seapt. tn., and wat.-pl. on the Sussex coast, England, 10 m. E.S.E. of Chichester. It is the port of Arundel, and has fine golf links. Queen Matilda landed here in 1139. Pop. (1911) 8,351.

Little Java. See BALI.

Little John. See ROBIN HOOD.

Little Missouri, trib. of the Missouri R., U.S.A., rising in Crook co., in the N.E. corner of Wyoming. It crosses the S.E. corner of Montana, the N.W. corner of S. Dakota, and flows through N. Dakota in a general N.E. direction to its confluence with the Missouri. Length, 450 m.

Little Popo, dist. of Togoland, German West Africa. Chief tn. Anecho, on the coast.

Littleport, par. and vil., Cambridgeshire, England, 5 m. N. by E. of Ely. Pop. (1911) dist. 6,434.

Little Rock, city, Arkansas, U.S.A., on the Arkansas R., 130 m. w.s.w. of Memphis, Tenn., the co. seat of Pulaski co., and the cap. and largest city of the state. It is an important commercial and manufacturing city. The industries include cotton gins and presses, cotton-seed oil and cake works, foundries, and machine shops. Pop. (1910) 45,941.

Little Russia, part of S.W. Russia, comprising the governments of Tchernigov, Kiev, Poltava, and Kharkov. Area, 80,314 sq. m. Pop. (1900) 14,058,000.

Little Sioux River, Iowa, U.S.A., rises in the N. of the

state, and flows s. to the Missouri. Length, 300 m.

Littlestone - on - Sea. See ROMNEY, NEW.

Littleton, SIR THOMAS (1402-81), English jurist, judge of common pleas under Edward IV., is remembered chiefly for his work on *Tenures*. Originally written for the benefit of his son, the work became widely known, was translated from the original Norman-French, and received high eulogy from Sir E. Coke. In its first edition (ascribed to 1481) it ranks as one of the earliest printed books. See *Coke on Littleton*; also the *Paston Letters*, ed. by Gairdner (1872; new ed. 1896).

Littomia, a genus of liliaceous plants, with orange-coloured, drooping, bell-shaped flowers and light green leaves ending in tendrils. *L. modesta*, a native of Natal, is a desirable greenhouse plant.

Littoral Deposits are such as are accumulating in comparatively shallow water around the edges of the oceans and seas. On their seaward margin they pass gradually into the 'deep water deposits,' such as the fine blue and green muds and the organic oozes.

Littré, MAXIMILIEN PAUL EMILE (1801-81), French lexicographer, philosopher, and author, studied medicine, fought on the Parisian barricades of 1830, and in 1835-6 began his literary career as a contributor to the *National* and the *Revue des Deux Mondes*. In 1839 appeared the first volume of his translation of Hippocrates, completed in 1862. His adoption of the positivist philosophy marks an era in his life; while the variety of his pursuits in middle and later life testified to the versatility of his powerful intellect. His works on positivism include *Application de la Philosophie Positive au Gouvernement* (1849); *Conservation*,

Révolution, et Positivisme (1852); *Paroles de Philosophie Positive* (1859); and *Auguste Comte et la Philosophie Positive* (1863). His translations include Pliny's *Natural History* and Strauss's *Life of Jesus*. He also rendered valuable assistance in the preparation of the *Histoire Littéraire de la France*, and found time and energy for his great *Dictionnaire de la Langue Française* (4 vols. 1863-72; supplement, 1878). Connected with this is his *Histoire de la Langue Française* (1862). See Sainte-Beuve's *Notice sur M. Littré* (1863), M. Durand-Gréville in the *Nouvelle Revue* (August 1881), and *The Edinburgh Review* (1882).

Liturgy (Gr. *leitourgia*, 'public service'). The term liturgy, though used loosely of the entire prayer-book, is more properly applicable to the Office for the Celebration of the Holy Communion. In ancient liturgies the service was divided into two parts. The first was open to those under instruction who had not yet been baptized: it was known as the *Missa Catechumenorum*. The second part was termed the *Missa Fideliūm*, to which the baptized alone were admitted.

Mr. Pullan, in *The History of the Book of Common Prayer* (3rd ed. 1901), thus describes 'the great national families of the liturgy which already existed between the 4th and 7th centuries':—(1.) *The West Syrian Rite*. This is represented by the Greek liturgy of St. James. A Syriac version of this liturgy is still in use among the Maronites, a sect very numerous in the Lebanon, which has been united with the Roman Catholic Church since the 12th century; and also by the Syrian Monophysites in Asia Minor, Syria, and India. We have also some knowledge of the *Palestinian Rite*, once used at Jerusalem, and of which mention is made by St.

Jerome and St. Cyril of Jerusalem. (2.) *The East Syrian or Persian Rite.* This is now used by the Nestorians on the borderland of Turkey and Persia. (3.) *The Byzantine Rite*, which is now used throughout the Orthodox Eastern Church by all Greek-speaking Christians and by the Roumanians, Serbs, Bulgarians, Georgians, and others. This rite comprises three liturgies, that of St. John Chrysostom, of St. Basil, and of St. Gregory Dialogos. The *Armenian Rite* is a product of the Byzantine. (4.) *The Egyptian Rite.* A later development of this is the liturgy of St. Mark. The Copts still use a Coptic version of this liturgy. (5.) *The Roman Rite.* In the 3rd century the Western Church abandoned Greek as its official language. The earliest form of the Roman Catholic mass is in the *Leonine Sacramentary*, discovered at Verona about 1735. (6.) *The Gallican Rite*, a Latin rite used in France, Spain, and the British Isles.

With regard to the liturgies in use in Great Britain and Ireland before the Norman conquest, they may be divided into Celtic and Anglo-Saxon. The *Stowe Missal*, probably written in Tipperary in the 10th century, contains 'the most complete relic of the ancient Celtic eucharist.' The *Book of Deer*, written before 1130, contains a fragment of the Celtic Church in Scotland. Other fragments are found in Celtic books of Irish origin, as the *Book of Dimma*, in the 7th century; and the *Antiphonary of Bangor* (in Ireland), which belongs to the Ambrosian Library at Milan, and which dates from the 7th century. The Anglo-Saxons used the Roman liturgy. After the conquest the 'uses' of the different dioceses varied considerably. The principal were those of Hereford, York, and Sarum. The celebrated *Sarum Use* was introduced by Os-

mund, bishop of Salisbury, about 1078. The best-known service books used in England shortly before the reformation were the *Missale*, or Mass Book; the *Lectio-narius*, or Book of Lessons; the *Evangelistarum*, or Book of Gospels; the *Antiphonale*, or *Graduale*, and the *Troparium*, containing certain choral parts of the mass. There were also the *Processionale*, containing hymns, litanies, etc., suitable for processions; the *Manuale*, or book of offices; the *Pontificale*, or episcopal rites; the *Hymnarium*; the *Portiforium*, or daily services; and the *Psalterium*, or psalms divided into daily portions. There was also a popular layman's prayer-book called the *Primer*. In 1542 the Breviary of Sarum was followed throughout the province of Canterbury. In 1543 Convocation commenced the reforming of mass books, and in 1548 a commission of bishops issued *The Order of the Communion*, which, among other reforms, restored the chalice to the laity, but continued the use of wafer bread. The Book of Common Prayer acquired its present form through several revisions until it was finally adjusted and accepted at the Savoy Conference in 1661.

The following is a list of the principal liturgies:—The *Clementine*, found in the apostolical constitutions; St. James's, used in the church of Jerusalem; St. Mark's, used in the church of Alexandria; St. Chrysostom's, used at Constantinople; St. Basil's, also at Constantinople; St. Basil's, at Alexandria; the liturgies of Ethiopia, of Nestorius, and of Severus; the Gothic missal, the Gallican, the Mozarabic, and the Roman.

For further information consult Neale's *Introduction to the History of the Holy Eastern Church* (1868), Hammond's *Liturgies Eastern and Western* (1878), and Mas-

half's *Ancient Liturgy of the Church of England* (1844).

Liu-ku. See LOO-CHO.

Liu-kung, small isl. in the bay of Wei-hai-wei, China, leased to Great Britain in 1898. Pop. 4,000.

Liutprand, or LIUDPRAND (c. 922-c. 972), Italian bishop and chronicler at the court of Berengarius of Italy, by whom he was sent on an embassy to Constantinople in 949. But the withdrawal of his patron's favour sent Liutprand to the court of Otto I. of Germany, after whose invasion of Italy he became bishop of Cremona. He took his revenge on Berengarius in *Antapodosis*, a history of the period 886-960. He also wrote *De Rebus Gestis Otttonis Magni Imperatoris* (960-4); and a satire, *De Legatione Constantino-politana* (968-9). The best edition of his works is in the *Monumenta Germaniae Historica*. See Küpke's *De Vita Liudprandi* (1842), and Baldeschi's *Liudprando* (1889).

Livadia. (1.) Township, 3 m. a.w. of Yalta town, on s. coast of the Crimea, S. Russia, 3 m. a.w. of Yalta. It is notable for its Russian imperial residence, a favourite resort of Alexander II. (2.) (Gr. *Lebadia*), town, nomarchy of Boeotia and Attica, Greece, on Lamos, near Lake Copais, 57 m. n.w. of Athens; owed its importance in ancient times to the subterranean oracle of Trophonios. Produces oil and grain. Pop. 6,500.

Livingst. GEORGE DOWNING (1827), English chemist and spectroscopist, born at Nayland, Suffolk. He was appointed professor of chemistry at the Royal Military College, Sandhurst (1860), and was professor of chemistry, Cambridge, from 1861 to 1908. In addition to numerous papers on spectroscopy and crystallization, he has published *Chemical Equilibrium* (1885);

Ultra Violet Spectra of the Elements (1883-8), with Professor Dewar; *Spectra of Oxy-Hydrogen Flame* (1888); and, with Mr. Warren, *Report on University Colleges* (1897).

Liver. The liver is the largest gland in the body, weighing nearly four pounds, and measuring about eleven inches in transverse diameter. Its upper surface is convex, and lies in contact with the diaphragm above; while its lower surface is concave, arching over and touching the stomach, intestine, and right kidney. In shape the liver is irregular, being thickest from above downwards upon the right side, and extending in wedge fashion towards the left. It is also thicker posteriorly, and presents in front a thin edge which is marked by a deep notch. The right lower border corresponds with the margin of the ribs, but its position varies to some extent with the movements of the diaphragm, to which the liver is attached by ligaments, formed by folds of the peritoneal covering, which also dips into the fissures. Five fissures on the under surface of the organ divide it into a corresponding number of lobes, and in one of the anterior fissures lies the gall-bladder, a pear-shaped membranous sac about four inches in length and one inch in breadth at its widest part. One of the fissures on the posterior border of the liver is occupied by a portion of the inferior vena cava, which receives the blood from the hepatic veins before it passes upwards through the diaphragm. The blood supply of the liver is complicated. Like all other animal tissues, it requires arterial blood. Amongst the functions of the liver are the elaboration and the storing up of certain products of digestion which are brought to it by the portal vein. This large venous trunk is built up by the union of the intestinal veins which

contain blood charged with food extractives, and reaching the liver it ramifies like an artery within the substance of that organ. The liver substance consists of innumerable distinct lobules which longitudinally are oblong, but transversely present a polygonal surface. The liver is plentifully supplied with lymphatics, and with nerves largely derived from the sympathetic system.

Until comparatively recent years the chief function of the liver was supposed to be the production of bile, the importance of which in the process of digestion was greatly overestimated. Bile is a golden-yellow fluid, intensely bitter in taste, and alkaline in reaction. Bile is now regarded more as an excretion than a secretion, being a by-product formed by the liver cells in the course of manufacture of more important compounds. Receiving as it does the blood from the alimentary canal, the liver subjects the food to a second digestion, and while transmitting through the hepatic veins to the general circulation whatever is required for immediate use, it retains and stores up any surplus, which it subsequently doles out to the tissues as required. The substance which is thus manufactured and passed on to the blood is a sugar called glucose, and the excess is stored up in the liver cells in the form of glycogen. One more function of the liver is the regulation of the number of red blood corpuscles. During fetal life great numbers of red blood cells are produced in the hepatic capillaries. After birth, however, the liver assumes the opposite role in the economy of the blood, destroying, as it does, the old and effete red corpuscles, whose haemin and other iron-free pigments it excretes with the bile, the iron of the hemoglobin being retained for subsequent use.

The commoner diseases of the

liver have already been dealt with in the articles JAUNDICE and GALL-STONES, but there remain to be described some pathological conditions in which jaundice may not be a symptom. Of these, cirrhosis in one or other of its forms is the commonest. This disease is due to long-continued irritation of the liver, and is generally associated with spirit-drinking, but a similar condition follows the chronic venous congestion caused by some forms of heart disease. In the later stages of the disease the liver is hardened and greatly decreased in size. The symptoms vary to an extreme degree, even advanced cirrhosis in some cases causing little disturbance. In other cases chronic congestion of the abdominal organs results, bringing in its train intestinal irregularities and hemorrhages, kidney cirrhosis, oedema of the feet and legs, and finally ascites. Should jaundice be present, it is generally only slight. In some cases, more especially when the kidneys also are cirrhotic, cerebral symptoms ensue.

Treatment must be directed towards the relief of symptoms, and if possible the arrest of the process. Total abstinence from alcohol is essential. Diuretics and sharp purgatives help to relieve the engorged abdominal vessels, and in some cases iodide of potassium is useful. Digitalis may also be employed to give tone to the vessels. When ascites develops it is advisable to resort to tapping.

Fatty liver may in drunks be associated with cirrhosis, or it may be merely a part of a general obesity. From such conditions which are due to infiltration of fat must be distinguished fatty degeneration, which occurs in acute yellow atrophy of the liver, or as a result of certain poisons like phosphorus.

New growths of the liver and bile passages are not infrequent.

They may arise primarily, or may be secondary to disease elsewhere. Carcinoma is the commonest form of malignant growth in the liver; sarcomata are also found, but they are usually secondary.

Abscess of the liver is happily rare in this country. When it does occur it is usually the result of pyæmia or of septicæmia. In the tropics solitary liver abscesses are not uncommon as a sequela of dysentery. Such solitary abscesses may become encysted and give rise to little or no further trouble, or they may point and rupture. Of late years great success has attended the evacuation of liver abscesses by free incision and drainage.

Rupture of the liver sometimes occurs as the result of a blow, and wounds may be caused by bullets or by cutting instruments.

Liver Fluke (*Distomum hepaticum*), a destructive parasite of the sheep, in which it gives rise to the disease known as sheep-rot or liver-rot. The adult fluke is about one inch in length and half an inch in breadth, and is flat, oval, and leaflike. The name *Distomum*, or two mouths, refers to the fact that in addition to the true mouth there is an imperforate sucker, looking like another opening, a short distance behind the mouth. The alimentary system consists of a blind but much-branched gut, and there is a very complex system of reproductive organs. The life history is complex. The adults live in the liver and bile-ducts of the sheep, deer, and other ungulates, when they give rise to the disease known as the 'rot.' Their very numerous eggs pass out of the body of the host with the faeces. If they fall on damp ground, the shell which surrounds the egg bursts after a lapse of some weeks, and a little ciliated embryo emerges. This swims about in water for a

few hours on the surface of the ground, but dies if within that time it does not come into contact with the little fresh-water snail *Limnaea truncatulus*. If it meet the snail, it enters its 'lung' or pulmonary chamber, and there becomes converted into a stationary form known as the sporocyst. The sporocyst produces eggs which develop without previous fertilization into new forms called rediae. The rediae migrate from the lung to the liver of the snail, and there produce successive generations of rediae. Eventually, however, they produce a new form known as the cercaria. This has a long tail, two suckers, and a forked food-canal. It wriggles out of the snail, swims through the water by means of its tail, and finally becomes encysted on stems of grass at the margin of the pool. If these cysts be eaten by a sheep, the wall dissolves in the stomach, and the cercaria grows into an adult fluke. Effective drainage of the pastures is the best way of keeping down the disease. The parasite is most common in the sheep, but it is also capable of living in oxen and even in man himself. For the allies of the liver fluke, see TREMATODEA.

Liver of Sulphur consists chiefly of polysulphides of potassium along with other salts, and is obtained by fusing potassium carbonate with sulphur. It forms a dark-brown mass which blackens silver, and gives off hydrogen sulphide when acted on by the carbon dioxide of the air or other acids. It is used medicinally in ointments to cure scabs and other skin diseases, and to a small extent internally.

Liverpool, parl. and munic. city in the county palatine of Lancaster and the hundred of W. Derby, England. It is situated on the eastern bank of the river

Mersey, about 3 m. from the sea. Historically we begin to hear of the town during the Irish wars of Henry II., that king finding it a convenient place for the embarkation of his troops. In 1207, during the reign of King John, the town received its first charter. In the same reign the castle of Liverpool was built. Though it existed some four hundred years, it made no mark in history. After the rebellion Charles II. dismantled it, and in 1725 it was entirely demolished. In 1229 Henry III. granted the town a charter of incorporation, and in it gave powers for the formation of a trades guild. Charles I. sold the manor of Liverpool to certain merchants of London, who reconveyed it in 1632 to Lord Molyneux of Sefton for £450. Ultimately the corporation purchased the reversion of the manor and its rights for £2,250. The growth of Liverpool and the development of its commerce from this time were so rapid that when Parliament in 1836 deprived the town of its town dues, the corporation received £1,500,000 as compensation.

Originally the port of Liverpool was under the jurisdiction of the customs officials of Chester, but in 1647 a separation took place, and Liverpool became independent. With the formation of the parish (1699) the erection of the present pro-cathedral church of St. Peter was begun, and was consecrated five years afterwards. In 1880 the diocese of Liverpool was created out of that of Chester, and Dr. J. C. Ryle became its first bishop. Liverpool is also a bishopric of the Roman Catholic Church.

Previous to the opening of the first enclosed dock in 1715, Liverpool shipping had to load and discharge cargo in the open pool. Originally the trade of Liverpool was principally with Ireland in flax and linen, cattle,

swine, and butter. But with the colonization of N. America and the W. Indies a more varied character was given to it, and its volume greatly increased. Through the development of the cotton and other manufactures of Lancashire, the town generally, as the port of shipment, greatly benefited. In 1801 the population of Liverpool was 77,708; the number of vessels, 5,060; the tonnage, 439,719; and the dock dues paid on it, £28,365. In 1910, the number of vessels was 24,961; and their tonnage, 16,654,071; while the dock dues paid reached £1,291,995.

Some idea of the extent and importance of the trade of Liverpool may be had from the following values of imports and exports in 1909 compared with those of several of the chief seaports:—London, £322,614,400; Liverpool, £298,217,850; Hull, £66,672,983; Southampton, £42,116,457; Glasgow, £41,238,900; Bristol, £17,651,450. The values of some of the principal imports into Liverpool in 1909 were: raw cotton, £46,246,954; wheat, £10,308,993; meat (beef, mutton, bacon, hams), £14,108,760; tobacco, £3,247,552; sugar, £4,015,024. The values of principal exports during the same year were: cotton manufactures, £48,760,180; iron and steel manufactures, £12,750,302; woollen manufactures, £8,807,574; machinery and mill work, £9,526,262.

During the year 1909 the tonnage entered and cleared at Liverpool from and to foreign countries was 10,841,194 tons, and to British possessions 3,499,894 tons—total, 14,341,088 tons. The tonnage at present owned in Liverpool exceeds the tonnage of the German empire; exceeds by a million and a quarter the tonnage owned by Norway; exceeds by a million and a half the tonnage owned by

France; and is three times the overseas tonnage owned by the United States of America.

The total area of the docks is 1,614 acres, and the quayage 36 m. Of this, 506 acres of land and dock space and 9 m. of quayage are in Birkenhead. The great landing stage was constructed in 1847, and enlarged in 1874 and 1897, for the purpose of facilitating the immense passenger traffic by the numerous steamers plying to the Mersey ferries, by the coasting steamers, and by ocean liners.

The University of Liverpool, formerly a constituent college in the Victoria University, Manchester, was incorporated by royal charter on July 15, 1903; and by a special Act of Parliament, Aug. 14, 1903, the powers and property of the University College, Liverpool, were transferred from the Victoria University to the new University of Liverpool. The School of Tropical Medicine is governed by a committee representing the university, the Royal Southern Hospital, and the merchants and shipowners of Liverpool, its main objects being to train medical men in the treatment of tropical diseases, and to encourage research. The Veterinary School forms part of the university. Among the many valuable adjuncts to the university may be mentioned the Tate Library in the Victoria Building (with 50,000 vols.), the museums devoted to archaeology, chemistry, zoology, engineering, botany, anatomy, pathology, materia medica, gynaecology, and hygiene.

The corporation of Liverpool entered upon the work of technical education in 1890, under the Technical Education Act of 1889; and the Technical Instruction Committee, besides giving efficient instruction in their great central school, assisted by grants of money all the educational agen-

cies in the city, from the elementary schools to the university. The work of the former Technical Instruction Committee is now absorbed in that of the Education Committee appointed under the Education Act of 1902.

The Liverpool Public Library was established in 1852, under a local act. It contains in its reference department over 150,000 volumes, and is rich in works on the fine arts and on natural history. The Hornby Library, adjacent to the Picton reading-room, contains 7,860 rare and valuable books and a unique collection of engravings, autographs, etc.; all of which were bequeathed to the city in 1906 by Hugh Frederick Hornby. There are eleven lending libraries, which provide another 163,680 volumes for readers; and also three evening reading-rooms. The Public Museum was the outcome of the extensive and important gift of the thirteenth Earl of Derby of the stuffed collection of animals formerly at Knowsley Hall. A few years later additional importance was given to the institution by the no less extensive and important collection of antiquities presented by Joseph Mayer. In 1877 the Walker Art Gallery was presented to the town by Sir A. B. Walker.

The electric lighting and electric tramway systems of Liverpool are among the largest and most successful undertakings of the kind in Britain. There are numerous parks and public gardens, including, besides the larger parks, some forty recreation grounds and enclosures, comprising altogether some 1,032 acres. The first public establishment of wash-houses for the poor in England took place in Liverpool on May 26, 1842.

Liverpool is well supplied with water, which is excellent in quality and abundant in quan-

tity. Its main sources of supply are from Rivington (Lancashire) and Vyrnwy (N. Wales).

Amongst architectural features the first place is given to St George's Hall. This modern basilica is of the Corinthian order of architecture, and possesses a dignity, refinement, and style which makes it one of the finest buildings of the classical Renaissance. The town hall is also in the Classic style, as are most of the public buildings of the city. The municipal offices form imposing buildings in the Palladian style. Among other important municipal buildings are the library and museum, erected by Sir William Brown; the Picton Reading Room, an extension of the library, erected by the city; the Walker Art Gallery, erected by Sir Andrew B. Walker; the technical schools; the Exchange Buildings, in the style of the Flemish Renaissance; the Cotton Exchange; the Mersey Dock Board Offices; the Tower Buildings; the general post office, Victoria Street; the offices of the Royal and Liver Insurance Companies; the Bank of Liverpool, Water Street; and Parr's Bank, North and South Wales Bank, and Adelphi Bank, all in Castle Street. Pop. (1911) 746,566. See Troughton's *History of Liverpool from the Earliest Period* (1810), Pictor's *Memorials of Liverpool* (1903), and *Handbook compiled for the Public Health Congress*, ed. by Dr. E. W. Hope (1903), Moore's *Liverpool in King Charles the Second's Time*, ed. by W. F. Irvine (1899), Muir's *History of Liverpool* (1907), Muir and Platt's *History of Municipal Government in Liverpool* (1906), Shaw's *History of the Liverpool Directorates* (1907).

Liverpool. (1.) Town and early settlement, New South Wales, on George's R., 20 m. w. of Sydney, in an agricultural

district. Manufactures paper. Pop. 4,000. (2.) Seaport, Nova Scotia, Canada, cap. of Queen's co., 65 m. s.w. of Halifax; has shipyards and fisheries. Gold is mined in the district. Pop. 2,000. (3.) L. PLAINS, generally level tract of pastoral country, ten million acres in extent, in the N.E. of New South Wales (co. Buckland). The Darling R. divides it from the Warrego district. The chief town is Tamworth. (4.) L. RANGE, part of the great Dividing Chain, New South Wales. Its highest point is Oxley's Peak, 4,500 ft.

Liverpool, CHARLES JENKINSON, FIRST EARL OF (1727-1808), English statesman. After distinguishing himself at Oxford, he entered Parliament (1761), where he became known as the leader of the 'king's friends.' Secretary of state under Grenville, he was afterwards Secretary for War in Lord North's administration (1778-82), his last important post being the presidency of the Board of Trade. He was created Earl of Liverpool in 1796. His valuable work, *On the Conduct of Government respecting Neutral Nations* (1758), was translated into several European languages.

Liverpool, ROBERT BANKS JENKINSON, SECOND EARL OF (1770-1828), English statesman, was educated at Charterhouse and Christ Church, Oxford; entered Parliament (1790), afterwards serving as a member of the India Board, and in 1801 became Foreign Secretary under Addington, in which capacity he concluded the treaty of Amiens. He was Home Secretary under Pitt and the Duke of Portland, and Secretary for War and the Colonies under Perceval; he became premier on the assassination of the last named (1812). His ministry, which lasted until 1827, was an eventful one, covering the crisis of the Napoleonic wars and

the subsequent settlement of Europe. See Yonge's *Life of Second Earl of Liverpool* (1868).

Liverpool Daily Post and Mercury. The *Liverpool Daily Post* came into existence in 1855 with the repeal of the stamp-duty. It suffered for a time for its espousal of the cause of the North in the American civil war. It was one of the first newspapers to introduce maps and diagrams, and its parliamentary and commercial intelligence, as well as its literary and dramatic criticism, has always been a feature of the journal. In 1879 the paper changed hands, Mr. Holbrook Gaekell, who had been sole proprietor since 1873, still retaining a large share; and from 1879 till the present time the *Daily Post* has been under the management of Mr. A. G. Jeana. Before this change took place Sir Edward Russell had assumed the editorial chair, which he has since filled with distinction. The *Post* has always been strongly Liberal in politics, and in 1904 it absorbed the *Liverpool Mercury*, another prominent Liberal organ, founded in 1811 by Egerton Smith, and published as a daily newspaper since 1888.

Liversedge, par. and tn., Spen Valley div., W. Riding, Yorkshire, England, 3 m. N.W. of Dewsbury; manufactures woollen and cotton goods, chemicals, iron, and machinery. Pop. (1911) 14,660.

Liverworts, the popular name given to the class of flowerless plants known as Hepaticæ from the shape of the vegetative parts. They are mostly dwarf plants, closely attached to the surface of damp rocks or wood; but some species are of larger and more erect growth. From the upper surface project minute funnels or stomata, and from the lower surface proceed unicellular rhizoids, which serve for purposes of at-

tachment and absorption. By mere fission, propagation may be effected, as it may also be by means of clusters of gemmae formed in special receptacles. In addition to these asexual methods of reproduction, male and female organs are borne on the surface of the thallus, and the female cells when fertilized give rise to a sporangium containing spores, from which fresh plants are developed. The orders of liverworts are known as Monocleaceæ, Jungermanniaceæ, Anthocerotaceæ, and Ricciaceæ.

Livery. See COMPANIES, CITY.

Livery. The word primarily indicated those distinguishing marks on the dress of individuals which marked them out as the adherents of a particular party or service. Liveries were the forerunners of military and 'civil' uniforms; hence the phrases 'the livery of the sovereign,' and 'the livery of the state.' In modern phrase 'livery' is exclusively applied to the dress of servants and dependants, and displays the principal colours of the arms of the employer.

Livery of Selain. See FROPPMENT.

Livia Drusilla, the wife of the Emperor Augustus, was the daughter of Livius Drusus Claudianus, and was first married to Tiberius Claudius Nero, by whom she had two sons, Tiberius and Drusus. Augustus compelled her husband to divorce her (38 B.C.) in order that he himself might make her his wife. She had great influence over the emperor, and secured the succession for her son Tiberius. See Baring-Gould's *Tragedy of the Caesars* (1892).

Livingston. (1.) Seaport in Guatemala, at the mouth of the Rio Dulce, on the Gulf of Amatique. Steamers ply from the town up the Rio Dulce to Izabal (45 m.). Exports coffee, bananas, mahogany, hides, and rubber.

Pop. 2,000. (2.) City, Montana, U.S.A., co. seat of Park co., on the Yellowstone R., 100 m. s.e. of Helena, at an altitude of 4,485 ft. It is the starting-point for tourists to the Yellowstone Park. It has lumber mills, lime works, and machine shops, as well as coal, coke, and gold-mining interests. Pop. (1910) 5,359.

Livingston, EDWARD (1764-1836), American jurist and statesman. A republican congressman from 1795-1801, he became in the latter year United States attorney for New York, and mayor of the city. Leaving New York (1803) he built up at New Orleans a great legal practice. A member of the legislature of Louisiana, he prepared a code of criminal law, the excellence of which has been widely recognized. He became secretary of state in 1831, and was subsequently ambassador to France. See his *Criminal Jurisprudence* (1873), and *Life* by Hunt (1864).

Livingston, ROBERT R. (1746-1813), American jurist and statesman, brother of Edward Livingston, was admitted to the bar in 1773. He subsequently sat in the congress which was responsible for the Declaration of Independence, and in 1777 helped to draw up the constitution of New York state, under which he served as chancellor of the state until 1801. At the same time he acted as secretary of foreign affairs (1781-83), and as president of the New York Convention of 1788. As ambassador to France (1801-4) he successfully negotiated the purchase of Louisiana. Livingston was associated with Fulton in furthering steam navigation. See De Peyster's *Biographical Sketch* (1876).

Livingstone. (1.) Par. and vil., Linlithgowshire, Scotland, 3 m. n. of Bathgate; has oil-works. Pop. (1911) 3,714. (2.) Township and administrative cap. of North-

ern Rhodesia, on N. bk. of the Zambezi, about 4 m. from Victoria Falls. Sculling competitions were inaugurated in 1910 on a stretch of river 3 m. from Livingstone, which forms one of the finest regatta courses in the world. White pop. 250.

Livingstone, DAVID (1813-73), African traveller, born at Blantyre in Scotland. From the age of ten he worked in a cotton factory, at the same time teaching himself Latin and studying natural history. In 1836 he attended the medical class at Anderson College, Glasgow, and lectures at Glasgow University, afterwards receiving the diploma of the Glasgow Faculty of Physicians and Surgeons (1840), in which year he was ordained a missionary by the London Missionary Society, and set sail for the Cape. Settling in Bechuanaland, he married in 1844 Mary, daughter of Dr. Moffat. In 1849 he began his explorations by a journey to Lake Ngami and the Zambezi R., accompanied by Osswell and Murray. Again, in 1852, he reached the Zambezi at Sesheke, ascended the river, crossed the watershed to the Kasai, and arrived at the coast at Loanda. Retracing his steps to Sesheke, he passed down the river, discovering the Victoria Falls, and came to Quilimane in May 1856. After a visit to England, where various honours were conferred upon him, Livingstone returned to the Zambezi, having severed his connection with the London Missionary Society, and accepted the post of H.M. Consul at Quilimane (1858). From 1858 to 1864 he, with Dr. (afterwards Sir John) Kirk, explored the Zambezi, Shire, and Rovuma rivers, and discovered Lake Nyasa (1859). Returning to England in 1864, Livingstone spent about a year at home, and paid a visit to India before starting on his last jour-

ney. In April 1866 he landed at Mikindani, whence he marched by the Rovuma R. and the southern extremity of Lake Nyasa, and across the Loangwa and Chambesi rivers to the southern end of Lake Tanganyika, or, as he called it, Liemba. In the Lofu valley he made the acquaintance of the notorious slave-dealer Tippoo Tib, with whom he travelled to the north-eastern shore of Lake Mweru. He then visited the chief Kasembe, and discovered Lake Bangweolo (1869), and rejoining the Araba, crossed Lake Tanganyika, and came to Ujiji. Though suffering severely from illness, he left Ujiji again in July 1869, and after many hardships and dangers struck the Lualaba at Nyangwe. On his return to Ujiji in October 1871, he was, when in great straits, relieved by Stanley, who had been sent out by the *New York Herald* to find him. Stanley returned to the coast, taking with him Livingstone's journals, while the worn-out traveller marched southwards in 1872, and skirting the south-eastern shore of Tanganyika, struggled on in a dying state till he reached Chitambo's village, south of Lake Bangweolo, where he expired in May 1873. His body was carried by his faithful followers to the coast, and was buried in Westminster Abbey in April 1874. In 1902 a monument was erected on the spot where he died. During his three long journeys Livingstone opened up vast tracts to missionary enterprise and colonisation, discovered the lakes Ngami, Nyasa, Shirwa, Bangweolo, and Mweru, and the Lualaba R., the upper course of the Congo, and was the first European to traverse the whole length of Lake Tanganyika. The narrative of his early explorations was given in his *Missionary Travels in South Africa* (1857); of his second journey,

in *The Zambezi and its Tributaries* (1865); while his *Last Journals* were edited by the Rev. Horace Waller (1874). See Stanley's *How I Found Livingstone* (1872); Marryat's *David Livingstone* (1877); Moasman's *Livingstone, the Missionary Traveller* (1882); Blaikie's *The Personal Life of David Livingstone* (1884); Johnston's *Livingstone and the Exploration of Central Africa* (1891); Hughes's *David Livingstone* (1889); and Hume's *David Livingstone* (1904).

Livingstonia, former mission stn. of the United Free Church of Scotland, Nyassaland, Central Africa, named after Dr. Livingstone. On account of its unhealthy situation it was abandoned in 1883 in favour of Bandawé, on w. shore of lake Nyasa, though the name is still applied to the mission generally. The mission has some 500 schools, 1,000 teachers, and more than 30,000 scholars, with 25 European missionaries. See LAWS, ROBERT.

Livistona, a genus of tropical palms with unarmed stems and terminal, fan-shaped, much-divided leaves. Among the species are *L. chinensis*, which is hardy in some parts of Cornwall, growing to a height of forty feet; *L. australis*, growing to a height of seventy feet or more; *L. humilis*, and *L. Jenkinsonia*, both lower-growing species.

Livius, Titus, known as LIVY (59 B.C.-17 A.D.), the famous historian of Rome, was born at Patavium (Padua), in N. Italy, but spent most of his time at Rome. The real and only work of his life seems to have been his *History of Rome*, of which the first ten books were almost certainly published by 27 B.C., and which he perhaps had not completed at the time of his death. This great work contained the history of the Roman state, from the foundation of the city (753 B.C.) to the

death of Drusus (9 B.C.), consisting of 142 books, of which only 35 are extant—viz. 1st to 10th, and 21st to 46th; but good epitomes of all the rest, except the 126th and 127th, remain. Of the 35 extant books, several were recovered as late as the 15th and 16th centuries. Livy has been frequently edited, among the earlier editors being Gronovius, Ernesti, and Drakenborch; but the text remained in a corrupt state until the great edition of Madvig and Ussing appeared (1861-6; re-edited 1872-6; 4th ed. 1886), which is the best for the text. Editions with notes: Walker (1797-1813; new ed. 1862), and Weissenborn (1850; 2nd ed. 1856-66). Of individual books: Seeley, bk. i. (1871); Conway, bk. ii. (1901); and Luttenbacher, bks. iii.-x. (1891), xxi.-xxiii. (1894), and xix., xxx. (1893); Capes, bks. xxi.-xxii. The old translation of Philemon Holland (1600) is the best in English. A full account of Livy and his works will be found in Hübner's *Grundriss zu Vorlesungen über die Römische Litteraturgeschichte* (4th ed. 1878). See also Lachmann's *De Fontibus Historiarum T. Livii* (1822); Taine's *Essai sur Titte Livre* (1866; 5th ed. 1888); and Mackail's *Latin Literature* (1896).

Livius Andronicus. See ANDRONICUS.

Livno, fort. tn., Bosnia, 70 m. w. of Sarajevo, on the Bistritza. Pop. 5,300.

Livny, tn., Orel gov., Central Russia, 80 m. E.S.E. of Orel city, at junction of Livenka and Sosna (Don basin). It has trade in grain, flax, cattle, leather. Founded in 1586 as a Russian border fortress against the Tartars, it was the centre of the rebellion of 1606-13. Pop. 20,000.

Livonia, LIVLYANDIA, LIVLAND, or LIBMAA, gov. of N.W. Russia, forming one of the three

'Baltic Provinces,' bordered on the n. by Estonia, on the w. by the Gulf of Riga, on the s. by Courland, and on the e. by the governments of Vitebsk, Pakov, and St. Petersburg. Including Eest and Mohn Is., its area is 18,158 sq. m.; pop. (1900, est.) 1,443,700. Physically, most of Livonia is flat, marshy, or sandy, feebly sprinkled with thin forest or brushwood, enjoying nowhere special fertility. The chief rivers are the W. Dwina, Pernava or Pernau, Aa, and Great Embach. The chief lakes are Chudakoc or Peipus and Wirtz or Wirtz-Järvi, with an area of nearly 110 sq. m. Rye, barley, flax, wheat, oats, and hops are grown. The fisheries are abundant and important. In the forests, elk, wolves, and bears are hunted. The chief manufactures are distilling and sugar-refining; and machinery, tobacco, wool, cotton, linen, petroleum, timber, and linseed industries are also valuable. Commerce is very considerable, especially through the ports of Riga, Pernava (Pernau), and Arensburg. The population is mainly made up of Letts and Estonians, with large numbers of Germans, Russians, Jews, and Poles. The Russian code was introduced (1835), Russian language adopted in law courts and in all public and official acts (1867), the University of Dorpat (Yuriev) Russified, and the old name of the town restored (1889). Peter the Great won Livonia from Sweden early in the 18th century, and the province was recognised as Russian by the treaty of Nystad (1721).

Livorno. (1.) See LEGHORN. (2.) Comm., Italy, in Piedmont, 25 m. N.E. of Turin. Pop. 6,300.

Livre (Lat. *libra*, 'balance,' 'pound'), an old French coin which differed in value according to the place of issue. The most important was the *livre Tournois*

(the standard), which was equal to four-fifths of the Paris livre, and stood to the present franc in the ratio of 80 to 81. The livre was superseded by the franc in 1795. See LIRA.

Livry, tñ., France, 8 m. E.N.E. of Paris. Pop. 6,700.

Livy. See LIVIUS.

Lixiviation is the process of extracting the soluble components of a solid mixture by systematic treatment with water or other solvent, the pure solvent coming in contact with the nearly exhausted residue and the solution, as it becomes concentrated, with fresher and fresher material. Important instances of lixiviation are the extraction of carbonate of sodium from 'black ash' (see SODIUM), and of sodium nitrate from the earthy matter with which it is found.

Lixouri, or LIXOURION, seapt., w. of island of Cephalonia, Greece, on Gulf of Argostoli. It has a large trade. In the vicinity are the ruins of the ancient Pale. Pop. 5,000.

Lizard. Lizards, in the wide sense, are members of the order Lacertilia, which belongs to the sub-class of reptiles known as Sauria, in which are included both lizards and snakes (Ophidia). The right and left halves of the lower jaw are connected together by bone instead of merely by an elastic band, as in snakes. Usually, well-developed limbs are present, and also movable eyelids and cutaneous scales. Lizards are widely distributed over the globe. There is much variation in diet, for while the majority live on small insects, some, like the iguanas of America, are purely vegetarian, and others take comparatively large animals, such as frogs, mice, small birds, or even carrion feeders.

The most familiar forms of lizard belong to the genus *Lacerta*, which includes the common

British viviparous lizard (*L. vivipara*), the sand lizard (*L. agilis*) of Southern England, and the beautiful green lizard (*L. viridis*) of Southern and Central Europe, which touches the British area in the Channel Is. In all these, two pairs of well-developed limbs are present, each furnished with five-clawed digits. The tail is long and very brittle. The body is covered with pigmented scales, and the lizard shows some power of colour-change. Within the mouth small pointed teeth are present; the tongue is narrow, flat, and deeply bifurcated. In the viviparous lizard the young burst from the eggs as soon as these are laid; but the other forms deposit their eggs under plants or among weeds, and leave them to hatch in the sun.

In classifying lizards, Gadow recognizes three sub-orders—(1) Geckones, including the curious little geckos; (2) Lacerta, including all the typical forms; and (3) Chamaeleontes, the aberrant chameleons. For other members of the Lacertae, apart from the species of *Lacerta* noted above, reference should be made to such articles as MONITOR, IGUANA, HELODERMA, and SKINK; while the geckos and chameleons are discussed under these headings. See Gadow's *Amphibia and Reptiles* (1901) for a comprehensive account of lizards, and Boulenier's *Catalogue of Lizards in the British Museum* (1885-7).

Lizard, BATTLE OFF THE, fought (June 12, 1652) at the beginning of the first Dutch war, when Sir George Ayscue overtook the Dutch outward-bound E. Indian fleet of forty merchantmen, and secured half a dozen prizes.

Lizard Head, or **LIZARD POINT**, promontory with dangerous reef, s. coast of Cornwall, England, 16 m. s.w. of Falmouth, is the most southerly point of Great Britain. There are two fine light-



Species of Lizards.

1, 2, 3. *Lacerta muralis*. 4. *Moloch horridus*. 5. *Lacerta viridissima*. 6. *Lacerta vivipara*.
7. *Anolis lineatopus*. 8. *Draco volans*. (All half natural size.)

houses (electric light), and the siren fog-signal under the cliffs is said to be the most powerful of its kind. Outward-bound vessels are signalled at the signal station.

Ljusdal, comm., Sweden, in Gefleborg gov., and 90 m. N.N.W. of Gefle. Pop. (1911) 10,299.

Ljusne, riv., S. Sweden, rising on the Norwegian border s. of Helagsfjeld, and flowing into the Gulf of Bothnia, after a course of 240 m.

L.L.A., Lady Literate in Arts.

Llama, a domesticated member of the genus *Auchenia*, which, though in all probability descended from the wild guanaco, is recognized by many zoologists as a distinct species (*Auchenia glauca*). It is usually white, sometimes white spotted with brown or black, or, more rarely, uniform brown or black.

Llanberis, vil. and tourist resort, Carnarvonshire, Wales, overlooking lakes Padarn and Peris, 7 m. E.E. Carnarvon. Old Llanberis stands at the foot of the pass which divides the Glyders, Y Garn, and the Elidrys from Snowdon peaks. The Dinorwig slate quarries employ about 3,000 men. Pop. 3,000.

Llandaff, city, Glamorganshire, Wales, 2 m. N.W. Cardiff, beautifully situated in the Taff Vale. It is the seat of a bishopric. Pop. 6,000.

Llandaff, HENRY MATTHEWS, Viscount (1826), English jurist and statesman, was born at Ceylon; admitted as a barrister in 1850, becoming Q.C. and a bencher of Lincoln's Inn in 1868. Llandaff sat in the House of Commons as member for Dungarvan (1868-74), also as member for E. Birmingham (1886-90). On the advice of Lord Randolph Churchill he was made Home Secretary in the second Salisbury administration (1886-92). He was created Viscount Llandaff (1895), and acted as chairman of the Royal Commis-

sion on the London Water Supply (1897).

Llanddiniolen, par. and vil., Carnarvonshire, Wales, 4 m. N.N.E. of Carnarvon. Slate is quarried. Pop. 6,000.

Llandeilo, par. and vil., Carmarthenshire, Wales, 17 m. E. by S. of Carmarthen. Coal and ironstone are mined. Pop. 6,400.

Llandilo, mrkt. tn., Carmarthenshire, Wales, picturesquely situated on the N. bk. of the Towy, 14 m. E.N.E. of Carmarthen; has corn and woollen mills and breweries. Pop. (1911) 1,932.

Llandovery, bor. and mrkt. tn., Carmarthenshire, Wales, 18 m. W. by N. of Brecknock, on the Towy. The town has agricultural interests and several breweries. Pop. (1911) 1,993.

Llandrindod Wells, wat.-pl., Radnorshire, Central Wales, on the Ithon, 45 m. S.W. of Shrewsbury, and 750 ft. above sea-level. It has famous medicinal springs (sulphur, saline, and chalybeate). Pop. (1911) 2,779.

Llandudno, seaside tn. and summer resort, Carnarvonshire, Wales, on the isthmus between Great and Little Orme's Heads, 3 m. N. of Conway. Pop. (1911) 10,469.

Llanelli, mrkt. tn. and port, Carmarthenshire, Wales, on Burry Inlet, 10 m. W.N.W. of Swansea. Anthracite and bituminous coal are exported. There are manufactures of tinplates, copper, chemicals, and bricks and tiles; and there are iron foundries, rope works, and breweries. Llanelli has three floating docks and one tidal. Pop. (1911) 32,077.

Llanes, seapt., prov. Oviedo, Spain, on N. coast, 45 m. W. of Santander, is a celebrated bathing resort. Trade in timber, butter, and fish. Pop. 20,000.

Llanfairfechan, vil. and seaside resort in Carnarvonshire, Wales, 7 m. W.S.W. of Conway; under Penmaenmawr, and in

view of Great Ormes Head and Puffin Isle. Pop. (1911) 2,973.

Llanfair P. G., par., Anglesey, N. Wales, 4 m. from Bangor. Its fame rests upon its polysyllabic name, which in full is *Llanfair-pwllgwyngyll*.

Llangollen, mrkt. tn., Denbighshire, Wales, on the Dee, 9 m. w.s.w. of Wrexham. It has breweries and flannel and woollen factories, and stands in the Vale of Llangollen or Glyndyfrdwr, far famed for its beauty. The town bridge (1345) figures as one of the seven wonders of N. Wales. Pop. (1911) 3,250.

Llanidloes, munici. bor., mrkt. tn., and inland resort, Montgomeryshire, Wales, on the Severn, 19 m. w.s.w. of Montgomery, and 10 m. from Plinlimmon and the source of the Severn and the Wye; manufactures flannel and iron, and has mines of lead, blonde, and copper. Pop. (1911) 2,594.

Llano Estacado (Sp. 'staked plain'), extensive plateau, partly in Texas and partly in New Mexico, U.S.A., separated from the Rocky Mountains in the w. by the valley of the Pecos, and extending E. to form that source of the head-waters of the Red, Brazos, and Colorado Rrs.

Llanos. Spanish name for the vast plains of the Orinoco basin. The general characteristics of the Venezuelan llanos are the park-like grass, with clumps of trees and river-fringing woods common to the savanna. See Humboldt's *Analecten der Natur* (1826; trans. 1849); Schomburgk's *Reisen in Britisch-Guiana* (1847-8); Sacha's *Aus den Llanos* (1879); Schimper's *Plant-Geography* (1903).

Llanquihue. (1.) Province, S. Chile, between the Andes and the Pacific Ocean on W., prov. Valdivia on the N., and Argentina on the E. Area, 35,390 sq. m. Pop. 105,000. Its surface is mountainous, well wooded, and

well watered. Agriculture is the chief employment, and timber is exported. Chief tn. Puerto Montt, with a well-sheltered harbour on the bay of Reloncavi, 335 m. s. of La Concepcion. Pop. 5,000. (2.) Largest lake of Chile, in above prov., on the w. side of the Andes, situated in the great longitudinal valley, 13 m. from Puerto Montt. Area, 225 sq. m. Several German colonies are situated round the lake. On the E. rises the volcano Osorno (8,700 ft.).

Llanrwst, mrkt. tn., Denbighshire, Wales, in the beautiful Conway valley, 11 m. s. by E. of Conway. It has tanning, malting, and stocking manufacture. Pop. (1911) 2,519.

Llanthony, ruined monastery, Monmouthshire, England, on riv. Honddu, 9 m. N. of Abergavenny; was founded in 1107. In 1807 the priory became the property of Walter Savage Landor, who farmed it for three years, and thereby incurred financial ruin. The modern abbey, about 4 m. from the ruin, was founded in 1870 by the Rev. Joseph Lyne ('Father Ignatius').

LL.B., Bachelor of Laws.

LL.D., Doctor of Laws.

Llerena, tn., prov. Badajoz, Extremadura, Spain, 60 m. N. of Seville, in the midst of a fertile district which produces wheat, wine, and oils. Manufactures soap, linen, and coarse woollens. In the neighbourhood are silver mines. Here, in April 1812, the British defeated the French. Pop. 7,000.

Llewelyn the Great (d. 1240), Prince of N. Wales, succeeded his uncle, whose territory he usurped (1194). King John helped him to annex S. Wales, and he held the combined tracts as an independent kingdom, but eventually submitted to Henry III. — His grandson, **LLEWLYN AP GRUFFYDD** (d. 1282), succeeded his uncle, David II., in 1246. He

revolted from his allegiance to the English (1256), but made peace with Henry III., and ceded the lands east of the Conway. On the accession of Edward I. he refused to do homage; was summoned in 1274, and again in 1276, but refused to appear. His bride, Eleanor de Montfort, was captured by the English (1275) and detained at the English court; and although Llewelyn offered a large ransom for her, it was refused, and war broke out (1276). The English invaded Wales, and forced Llewelyn to sign the treaty of Conway (Nov. 9, 1277). He again revolted in 1282, and was slain in battle the same year. See Lloyd's *History of Wales* (1911).

Llorente, JUAN ANTONIO (1756-1823), Spanish historian and reformer. A priest of Calahorra and vicar-general (1782), he changed his religious views and became a liberal reformer within the church (1784). He was appointed secretary-general of the Inquisition (1789), but his advanced views soon compelled his retirement. He was persecuted and disgraced for several years, but was made canon of Toledo (1806). He sided with the French on the invasion (1808), and was ordered by King Joseph to examine and report upon the archives of the suppressed Inquisition. He accompanied Joseph in his flight to France, and there in exile published his famous *Histoire Critique de l'Inquisition d'Espagne* (1817-18), which brought fresh persecution on him. His *Portraits Politiques des Papes* (1822) caused his expulsion from France, and he died soon after in Madrid. He lives chiefly by his *History of the Inquisition*, of which editions have appeared in many languages. See his autobiography, *Noticia Biográfica* (1818), *Amador de los Ríos*, and *Historia Crítica de la*

Lloyd's *Literatura Española* (new ed. 1861-5).

Lloyd, EDWARD (1845), English tenor, vicar choralist in Westminster Abbey, born in London. He received his musical training in Westminster Abbey choir (1852-60), was afterwards tenor at St. Andrew's, Well Street, and later at the Chapel Royal. In 1867 he began singing at concerts, and four years later had his first great success at Gloucester musical festival in Bach's Passion music. Since 1888 he has been the principal tenor at the Handel festivals.

Lloyd's is the familiar name employed to designate the great association of marine underwriters in London. Towards the end of the 17th century a coffee-house was opened in Tower Street, London, by a Welshman named Edward Lloyd, and here the great institution originated. In 1692 its proprietor sought more ambitious quarters at the corner of Lombard Street and Abchurch Lane, where he began to attract underwriters and shippers as customers in increasing numbers. Sales of ships, shipping material, cargoes, and miscellaneous wares were frequent; and it was in those early days that the now historic auction 'pulpit,' which stands in the captains' room at the modern Lloyd's, was first established. Gradually the transactions at Lloyd's became more and more connected with exclusively maritime business, and especially with marine insurance. Shortly after 1726 *Lloyd's List* (originally established in 1696 as *Lloyd's News*) began to be issued; this contained all the latest news then available of the movements of ships. In 1774 Lloyd's moved into the first floor of the Royal Exchange, where they have remained ever since. The French war gave a tremendous impetus to the business of Lloyd's, and the risks which its members were able to take and to meet

successfully attracted a large marine insurance trade to London from all over the world. It has always maintained a character for generosity and public spirit, and to its initiative are due two great institutions of which this country has every reason to be proud—the Lifeboat Institution and the Patriotic Fund. In 1871 Lloyd's was incorporated by Act of Parliament. The corporation as such is not responsible for the liabilities of the individual underwriters who compose it, but before election each member has to place security for those liabilities in the hands of the committee. There are now over six hundred underwriting members, as compared with little over two hundred fifty years ago. The institution has a most completely equipped system of shipping intelligence all over the world. See Martin's *History of Lloyd's* (1876).

Lloyd's Bonds, a form of bond invented by a barrister named Lloyd. They are generally issued by a corporation or company under its seal, admitting indebtedness to the obligee in a certain amount, and promising to pay with interest on a future day. The object was to enable the company to borrow in excess of, but without infringing, its statutory powers. The Railway Regulation Act, 1844, s. 19, unsuccessfully attempted to forbid them (*in re Cork Railway*, L.R., 4 Ch., App. 748).

Lloyd's Register of British and Foreign Shipping is a society whose primary object is the classification of vessels. It is managed by a committee composed of merchants, shipowners, and underwriters, elected at the principal ports of the country. To enable a vessel to obtain a class, the plans must be approved by the committee, and the construction must be carried out

under the supervision of the society's surveyors, who forward their reports to the committee by whom the class is granted. The highest class assigned to iron and steel vessels is represented by the character 100A1, and that for wooden vessels by A1, A1, etc.

Lloyd's Register maintains a large and highly skilled staff of surveyors at the principal ports of every country. Its authority as a classification society is recognized all over the world. Parliament has entrusted it with the duty of assigning freeboards to vessels, and under the authority of the government it controls the testing of anchors and chains at all the public proving houses in the country. The society issues annually a register book containing very complete information regarding all sea-going vessels whether British or foreign; it also publishes annually a yacht register and a register of American yachts. For a more detailed history of this society, see *Annals of Lloyd's Register* (1884).

Loach, a general name applied to certain small fresh-water fishes allied to the carp, which belong to the sub-family Cobitide, of the family Cyprinidae. All have a small mouth furnished with from six to twelve barbels, and the scales are small or absent. Loaches are confined to Europe and Asia. The European forms usually occur in swift streams with a stony bottom, and are esteemed as food. The common British loach is *Nemacheilus barbatulus*. On the continent of Europe occur the giant loach (*Misgurnus fossilis*), which reaches a length of ten inches, and the spiny loach (*Cobitis tenuis*), the latter of which also occurs, though rarely, in Britain.

Load-line, a line marked on a vessel, as required by British law, to indicate the maximum

depth to which the ship may be immersed by loading. By the Merchant Shipping Act of 1876, mainly due to the efforts of Samuel Plimsoll, a circular disc twelve inches in diameter was to be painted amidships of every British ship, except coasters under eighty tons register, with a line eighteen inches in length drawn through its centre. This line is the maximum load-line in salt water. By an amending Act of 1890 the centre of the disc was to be placed at such a level as may be approved by the Board of Trade. These tests are repealed and their provisions re-enacted by the Merchant Shipping Act (1894). See MERCHANT SHIPPING.

Loan, a contract by which the temporary use of a thing is given by the owner to another person. When the thing lent is transferred to the borrower, to be used by him gratuitously for a definite period and returned without deterioration, this is the contract known in Roman law as *commodation*, and in Scots law as *commode*. In English law loan is a form of *bailment*. The property remains in the owner, though the possession is temporarily transferred. The borrower must take reasonable care, and return the specified thing lent at the agreed time. If the thing lent is injured or destroyed, without negligence on the part of the borrower, the lender bears the loss. If goods which are consumed in the using are lent for a specified time on an agreement to return their equivalent in quantity and quality at the time fixed, this is the contract of *mutuum*. The property in the goods lent passes to the borrower, and if they are lost or destroyed the borrower bears the loss. When money is lent, interest is not payable if there is no agreement, but under many circumstances an agreement is implied.

Loanda, SÃO PAULO DR., cap. of Portuguese colony of Angola, W. Africa, and of Loanda dist. The harbour is protected on the N.W. by the low sandy island of Loanda, 18 m. long, which has a population of 1,300, half of them fishermen. The climate is hot and moist and the rainfall light. Loanda exports coffee, india-rubber, wax, rum, and cocoa-nuts, and has engineering and boat-building works, salt pans, lime kilns, sugar, tobacco, and macaroni factories, and saw-mills. Pop. 23,000.

Loango. (1.) Coast dist., W. Africa, extends 200 m. from mouth of Congo N. to Mayumba; most of it lies within French Congo. Exports palm oil and rubber. (2.) Trading settlement and chief port, French Congo, W. Africa, 100 m. N. by w. of mouth of Congo R. Exports palm oil, guma, wax, copper, and ivory.

Loanhead, tn. Midlothian, Scotland, 5 m. s. by e. of Edinburgh. Coal is mined in the district. Pop. (1911) 3,483.

Loans, PUBLIC. See PUBLIC WORKS LOANS.

Loan Societies are governed by the Loan Societies Act, 1840, which does not apply to Scotland or Ireland. Any number of persons may form a society for making loans to the industrious classes, not exceeding £15 to any one person. They must frame a set of rules in accordance with the act, approved by the registrar of friendly societies, and enrolled with the clerk of the peace, and these rules cannot be altered without similar formalities. The property is vested in trustees, and the accounts must be laid before Parliament.

Loassa, a genus mostly of sub-tropical plants, natives of Chile and Peru, belonging to the order Loasaceæ. Nearly all the species are characterised by stinging hairs, and most are climbing or

trailing plants. Among the species are *L. prostrata*, a hardy trailing annual plant, bearing yellow flowers in summer; *L. vulcanica*, having white flowers with erect red nectaries; *L. Pentlandii*, with large orange-coloured flowers; and *L. canarioides*, with brick-red flowers, and covered with hairs so poisonous as to make it a dangerous plant to cultivate.

Lobachevsky, NICHOLAS IVANOVITCH (1793-1856), Russian mathematician, born at Nijni Novgorod. From 1816 till 1846 he was professor of mathematics at Kasan. Lobachevsky was the first to publish a non-Euclidian geometry. His works include *Principles of Geometry* (1829-30); *Imaginary Geometry* (1835); *Geometrische Untersuchungen zur Theorie der Parallelimmen* (1840; Eng. trans. 1891); *Pangtométrie* (1855). See Vassilieff's *Eloge Historique de Nicolas Lobachersky* (Eng. trans. 1894).

Lobanov Rostovski, ALEXIS HORISSOVITCH, PRINCE (1825-96), Russian statesman, entered the economic department of the Foreign Office at St. Petersburg (1844), becoming first secretary to Count Nesselrode (1847). He was minister to the Sultan (1878), in London (1879), and at Vienna (1882-96). From 1895 till his death he was minister for foreign affairs. His policy was vigorous and high-handed.

Lobau. (1.) Inland, Lower Austria, in the Danube, 7 m. below Vienna; utilized by the French as a military base in the war of 1809. (2.) Town, kingdom Saxony, Germany, on riv. Schwarzwasser, 12 m. s.e. of Bautzen; manufactures textiles, buttons, and pianos; has trade in grain and yarns. Pop. (1910) 11,256.

Lobberich, tn., Rhenish Prussia, 22 m. w.n.w. of Düsseldorf; has textile industries. Pop. (1910) 7,816.

Lobeira. See AMADIS OF GAUL. **Lobelia**, a genus of herbaceous plants belonging to the order Campanulaceae, bearing racemes of flowers with irregular tubular corollas, the limbs being five-partite, having a bifid upper lip and a trifid lower lip. Among the species in the genus are some of the best blue and scarlet flowering plants of our gardens. *L. cardinalis*, the cardinal flower, and *L. fulgens*, stately North American plants, are valuable herbaceous plants. They grow about two feet in height, have reddish stems and leaves, and in autumn bear flowers of brilliant scarlet. *L. splendens*, a Mexican species, is very similar in habit and colouring. *L. syphilitica* is also a hardy herbaceous perennial, but bears blue flowers. Of the half-hardy and greenhouse species with blue flowers we may name *L. erinus* (a Cape perennial species), *L. coronopifolia*, and *L. anceps*.

Lobengula (1833-94), king of the Matabele, succeeding Moselekatsze as absolute autocrat (1870). In 1893, on account of his repeated raids against the Mashonas, he was attacked by the British, and after severe fighting was defeated. He died shortly afterwards, deserted by his followers.

Lob Nor, or LOP-NOR, shallow lake (mainly fresh water) in the s.e. angle of Chinese Central Asia, to the n. of Altin-tagh (Kuenlun) mountains, lying between 39° and 40° N. and between 88° 50' and 90° 20' E., over 2,180 ft. above sea-level. Length about 80 m. and average breadth about 10 m. Fish abound, especially salmon and carp. The whole drainage of Chinese Turkestan is received by Lake Lob.

The ancient Lob Nor, mentioned by so many travellers (especially Chinese), is now wholly dried up. It lies to the n. of the present

lake, almost exactly at the same level, and is only separated from it by an insignificant rise of ground. Sven Hedin, in 1901, noted the tendency of the lake to return to its ancient bed.

Lobo, JERONIMO (1583-1678), Portuguese missionary, joined the Society of Jesus (1609), and went to India (1621). In 1625 he began his labours as a missionary in Abyssinia. On the expulsion of the missionaries from that country he went back to India, where he became provincial of Goa, returning to Lisbon (1656). His work on Abyssinia was translated in an abridged form by Dr. Johnson (1735).

Lobos Islands, or **SEAL ISLANDS**, two small groups of rocky islets in the Pacific, some 12 m. off the coast of prov. Lambayeque, Peru. The largest and most northerly is Lobos de Tierra (5 m. long and 2 m. broad). They have rich deposits of guano.

Lobositz, tn., Bohemia, Austria, on the l. bk. of the Elbe, 40 m. N.N.W. of Prague; manufactures sugar. Here Frederick the Great defeated the Austrians in 1756. Pop. (1911) 5,076.

Lobsters are long-tailed (macrourous) Crustacea belonging to the order Decapoda and the family Nephropidae. They are characterized by the presence of a long beak or rostrum, a subcylindrical shell or carapace, and a joint in the outer branch of the last pair of swimmerets. Of all the lobsters, those of greatest commercial importance are the common lobster of Europe (*Homarus vulgaris*) and its near ally the American lobster. Both species are large and prolific, but in spite of the enormous number of eggs which are laid, both seem to be diminishing in numbers. The eggs are carried about by the mother until they hatch. When hatched the young are very unlike the mother, but resemble

certain shrimp-like Crustacea belonging to the genus *Mysis*, whence they are described as *Mysis larva*. Not until after several moults do they acquire the characteristics of the adult, and in their young stages they are preyed upon by numerous marine animals. The young are adapted for life in the open water, but the adults haunt rocky coasts, and seem to be relatively sedentary animals. Among other lobsters may be mentioned the Norway lobster (*Nephrops norvegicus*), sometimes known as the Dublin prawn, which is very abundant on some parts of the N.E. coast of Britain and in Dublin Bay. It is of an orange-yellow colour, with long, slender forceps, and is a very much smaller species than the common lobster. Allied forms belonging to the genus *Nephrops* occur at great depths, and have rudimentary eyes.

Lob-worm. See **LUG-WORM**.
Local and Personal Acts. See **ACT OF PARLIAMENT**.

Local Debts. See **PUBLIC DEBT**.

Local Government is a term used to indicate all those administrative or even legislative bodies which have been called into existence or utilized to supplement the work of the central government. Generally speaking, the institutions and organs of local government have been specifically created to exercise their functions; but occasionally a surviving institution has been utilized.

Certain principles seem to have guided governments in their choice of the functions which might be delegated to minor bodies. The first, and perhaps the most important, is to entrust special interests to those specially interested. Secondly, the central government has sometimes found it desirable to promote or permit diversity instead of uniformity of institutions.

The extent to which devolution of function may be carried varies greatly. In all cases it is limited, or should be limited, by the general interests of the nation; and in many cases where devolution is possible, supervision by the central government is highly advantageous—e.g. in education.

The distribution of the country into areas suitable for local government is a matter of some importance. A good deal of controversy arose over this point in the discussion of the Education Bill, 1903. The controversy was confused by the intrusion of another local government problem—viz. that of *ad hoc* electoral bodies.

For the history of local government, see the article *COUNTY COUNCIL*; also Goudy and Smith's *Local Government in Scotland* (1880), Probyn's *Local Government and Taxation* (1882), Sidgwick's *Elements of Politics* (1891), Jenks's *Outline of English Local Government* (1894), Webb's *English Local Government* (1906-8), Gross's *Bibliography of British Municipal History* (1897), and Odger's *Local Government* (English Citizen Series, 1907).

(1.) IN ENGLAND. During the last quarter of the 19th century Parliament devoted a considerable portion of its time to the development of local government in the United Kingdom. The main objects at which the legislation upon this subject has aimed may be said to be increased efficiency in sanitation, simplification and uniformity of areas and jurisdiction, and the creation of a wider franchise in the case of the electors by whom the members of local authorities are selected. From the legislation on this subject within the period in question three acts may be singled out as of capital importance. The Public Health Act, 1875, although amended and added to by many subsequent

enactments, is still the foundation of the sanitary law in England. The Local Government Act, 1888, created county councils invested with many of the powers formerly exercised by the justices of the peace in quarter sessions. The Local Government Act, 1894, created parish councils, and made material alterations in the mode of election and the powers and duties of the sanitary authorities which already existed under the Act of 1875.

The government of the metropolis, although largely affected by the Acts of 1888 and 1894, is not regulated by the Public Health Act of 1875, but by a different series of enactments. It is dealt with separately (see LONDON-GOVERNMENT). The poor law also forms the subject of a separate article, and is only touched upon incidentally here.

Areas of Administration.—The present areas are:—(1) The parish; (2) the urban or rural district; (3) the administrative county. Save in a few exceptional cases, for which special provision has been made, each parish is wholly included in a single urban or rural district, and each such district is included in a single administrative county. The overlapping of jurisdictions is thus avoided. Poor law unions, on the other hand, often extend into more counties than one.

The parish as the unit of local government is distinct from the ecclesiastical parish; it is a purely civil area, and its boundaries are, as a rule, well defined. County councils have ample powers to divide and combine existing parishes, and thus to create new parishes, making in each case all proper provisions for the local government of the units so created. The Local Government Board have similar powers, and orders of county councils altering parishes require confirmation by that

board. Urban districts may be either (a) municipal boroughs, many of them of very ancient origin, many of them created in comparatively recent times by royal charter under the Municipal Corporations Act, 1882, or certain earlier acts; or (b) districts which have been created by special legislation, or by orders of the Local Government Board, or of county councils confirmed by that board. These districts have usually been formed where a part of a rural district, by reason of building operations and consequent increase of population and rateable value, has acquired the character of a town or large village. Since 1894 the correct title of an urban district, other than a borough, has been 'the urban district of . . . in the county of . . .'; boroughs retain their distinctive titles, and some are known as cities.

A rural district is the area of a poor law union (or so much of it as is situate in one county), exclusive of any part of it which is included in an urban district. It usually comprises several parishes; but either an urban or a rural district may consist of a single parish.

The administrative county, for which a county council is elected, is not in all cases the same area as the county at large which returns members of Parliament. See COUNTY COUNCIL.

Parish Meetings.—Every rural parish (i.e. every parish in a rural district) has a parish meeting, consisting of the parochial electors of the parish. Registers, or lists, are framed under the acts relating to the registration of electors, containing the names of the parochial electors of each parish, and only the persons whose names appear in these registers or lists are entitled to vote at a parish meeting; their names cannot be inserted in the

register unless they are duly qualified (by the ownership or occupation of property) to be registered as parliamentary electors, or as county electors or burgesses. (See ELECTIONS.)

The powers which may be exercised by a parish meeting differ according to whether there is or is not a parish council for the parish. But in all rural parishes the parish meeting has the exclusive power of deciding whether certain acts (sometimes called 'Adoptive Acts') relating to the lighting of the streets, the provision of libraries, baths, and wash-houses, or a parish burial-ground, shall or shall not be put in force in the parish. Where there is a parish council the councillors are elected by the parochial electors, either by show of hands at a parish meeting, or, if a poll is demanded, then at an election by ballot; and the meeting has the important right of limiting the expenditure of the council to the proceeds of a rate of 3d. in the pound, and of placing a veto upon the raising of a loan by the council. In the small rural parishes in which no parish council exists the parish meeting appoints the overseers of the poor, and the trustees of certain classes of parochial charities, and has certain other minor powers of a parish council.

Parish Councils.—A parish council was created by the Act of 1894 for every rural parish having a population of 300 or upwards at the census of 1891. Parish councils may also be created, by order of the county council, in smaller parishes, and a like order may group two or more parishes under one common parish council. The parish council may consist of from five to fifteen members, as prescribed by the county council; their chairman may be elected as an additional member, or from their own body;

the term of office is three years; the election is held in March or April in every third year; the qualification is, being a parochial elector or a certain length of residence in or within three miles of the parish; women, both married and single, are eligible if otherwise qualified. Among the more important of the powers of a parish council are the following: (a) the appointment of overseers; (b) the appointment of trustees of non-ecclesiastical charities in certain cases; (c) the provision of a parish hall or offices, and of a parish recreation ground or public walks; (d) the provision of allotments for the labouring classes; (e) the acquisition of land (for the above purposes) by agreement, or, under a special order of the county council, compulsorily, including, in the case of land for allotments, hiring in lieu of purchase; (f) the execution of any of the Adoptive Acts which may be in force in the parish; (g) the acquisition by agreement of rights of way for the benefit of the parish, and the repair of public footpaths; (h) the utilization of wells or springs for water supply and the suppression of nuisances from offensive ponds or ditches, but not so as to interfere with private rights; (i) making complaint to the county council of the failure of the rural district council to perform their duty as sanitary or highway authority; (j) to borrow on the credit of the poor rate of the parish, subject to the consent of the parish meeting, the county council, and the Local Government Board. The parish council cannot (apart from expenditure under the Adoptive Acts) expend more than the proceeds of a sixpenny rate, or, without the consent of the parish meeting, more than the proceeds of a threepenny rate.

District Councils.—Under the Local Government Act, 1894, all

existing local boards and Improvement Act Commissioners became urban district councils; the old bodies were thus continued under a new name. This was not so as to the rural authorities: before that act the guardians of the poor of a union were the sanitary authority for the rural part of the union, with the result that guardians elected for urban parishes acted as to sanitary matters with respect to the rural parishes which had no voice in selecting them. To remedy this state of things the act created rural district councils, consisting of councillors elected by rural parishes only; and to avoid multiplicity of elections, it was provided that the councillors elected for a particular rural parish should also represent that parish on the board of guardians. The boards of guardians for a union, and the rural district councils of the rural districts comprised in that union, are thus distinct bodies, although they may have many (in some cases all) of their members in common. The number of members of a district council may be fixed (in the formation of a new district) or varied by the county council; they may elect a chairman from within or without their own body; the term of office is three years; one-third of the members retire in each year, and their places are filled at an annual election, unless an order of the county council or the Local Government Board has provided for triennial retirements and elections. The qualification is, being a parochial elector of a parish within the district or residence in the district (or, in the case of councillors of a rural district, in the union comprising it) for the twelve months preceding the election, which is held in March or April; the female sex is not a disqualification. Where an urban district is a

borough or city, the urban sanitary authority is the mayor, aldermen, and burgesses (or citizens) acting by the council, and the provisions of the Municipal Corporations Act, 1882, as to election, qualification, etc., apply. The powers and duties of district councils are too numerous to be given in detail in the compass of this article: they include the whole administration of the sanitary law as embodied in the Public Health Act, 1875, and the acts amending the same. These councils are also the highway authorities in respect of all highways, except main roads under the control of the county councils. They have also the duty of protecting public rights of way, and they have powers relating to the regulation of commons and the maintenance of common rights. District councils have large rating powers; their power to borrow upon the security of the rate is subject to certain limitations and to the approval of the Local Government Board. The council of an urban district is often the authority for executing Adoptive Acts within the district; in some cases, however, a separate authority exists for this purpose. In many urban districts the powers of the council have been materially augmented by the provisions of local acts. The powers of an urban are fuller than those of a rural council, particularly as to such matters as sewerage and paving, but the Local Government Board can confer urban powers upon a rural council in respect of particular areas within its district.

County Councils. See COUNTY COUNCIL.

See also, on local government, the titles ELECTIONS, LOCAL GOVERNMENT BOARD, PUBLIC HEALTH. Authorities: Macmorran and Dill on the Local Government Act, 1888, and on the

Local Government Act, 1894; Lumley's *Public Health*.

(2.) IN SCOTLAND. For the purposes of local government, Scotland is divided into counties and burghs. There are thirty-three counties. The counties, except the smaller ones, are divided into districts; each district is divided into parishes. Each county has a county council and a standing joint committee. Each district has a district committee. Where the county is not divided into districts the county council acts as district committee. Each parish has a parish council. Each burgh has a town council. In some cases a parish falls partly within a burgh (burghal part), partly without (landward part). Each parish has also a school board. The central authorities are the Local Government Board for Scotland, the Secretary for Scotland, and the Lunacy Board.

County Council.—County councils were first established under the Local Government (Scotland) Act, 1889. The electors are all those registered as parliamentary electors, and all peers and women (married or unmarried) possessing a qualification that, but for the fact of their being peers or women, would entitle them to be placed on the register of parliamentary electors. The county is divided into electoral divisions, which must be one or other of the following: a parish, two or more parishes, part of a parish, parts of two or more parishes, a parish and part of a parish, a police burgh of less than seven thousand of a population, certain royal burghs. The electors of each division elect one county councillor. The Secretary for Scotland in the first instance determines the number and apportionment of councillors.

The leading powers of the county council are as follows:—They own and maintain road-

and bridges; they administer the Contagious Diseases (Animals) Acts, and the Destructive Insects Act, 1877; they have certain regulative powers over the district committees, which execute the Public Health Acts; they must appoint a county medical officer of health and a county sanitary inspector; they are the local authority for the acts relating to gas meters, explosives, weights and measures, habitual drunkards, and wild birds; they appoint visitors to public, private, or district lunatic asylums; they may make by-laws against certain nuisances. They are also the local authority for the administration of the Rivers Pollution Act, under the Secretary for Scotland.

Commissioners of Supply.—Before the establishment of county councils, the commissioners of supply were the chief governing body; they were elected on a property franchise, and must, by the Valuation of Lands (Scotland) Act, 1854, have a certain property qualification. Under the Local Government (Scotland) Act, 1889, they were continued for two purposes—the appointing of members to the standing joint committee (see next paragraph), and a committee for disposal of claims and objections under the provisions of the Commissioners of Supply (Scotland) Act, 1856. Practically, the commissioners have only one function—the appointing of members to the standing joint committee.

Standing Joint Committee for County.—This committee is composed as follows: a number of county councillors (not exceeding seven) appointed annually by the county council in May, a number of commissioners of supply (not exceeding seven) appointed on same day, the sheriff of the county *ex officio*; six members to form a quorum. The standing

joint committee is the police committee under the Police Act, 1857, and has charge of the county police. It also controls all capital expenditure in the county. No county council or district committee (see next paragraph) can undertake works involving capital expenditure without the consent in writing of the standing joint committee.

District Committee.—The districts of a county are made up of parishes, or parts of parishes, or other county electoral divisions. The district committee consists of the county councillors for the electoral divisions of the district, and of parish councillors (see below) selected by each parish council in the district. Each parish has thus two representatives on the district committee—one elected by the electors, the other appointed by the parish council. There is also a representative from each burgh within the meaning of the Roads and Bridges (Scotland) Act, 1878.

The district committee is the local authority for the administration of the Public Health Acts in the counties. (See PUBLIC HEALTH.) It must appoint a district medical officer of health and sanitary inspector. These officers may be, and usually are, also county council officers. The district committee has no power of raising money by rate or loan; the county council has this power. Under the county council, the district committee manages the roads and bridges.

Parish Council.—By the Local Government (Scotland) Act, 1894, a parish council was established in every parish. There are in Scotland some nine hundred parishes. The number of councillors in the case of landward parishes is fixed by the county council; in the case of burghal parishes, by the town council; in the case of parishes partly burghal

and partly landward, by the county council and town council jointly. If no agreement as to numbers can be come to, the Local Government Board fixes the proportion. The parish councils are thus definitely related to the primary local government bodies—the town council and county council. The franchise is the same for all three councils, and the elections take place on the same day. The election is regulated by the Local Government Board, which may order a new election when the conditions of the act are not fulfilled. The number of parish councillors in any parish cannot be less than five or more than thirty-one.

The primary duty of parish councils is to administer the acts relating to the poor law, the chief act being the Poor Law (Scotland) Amendment Act, 1845. The councils are subject to the Local Government Board. (See POOR LAW.) They must provide for the maintenance of pauper lunatics having a settlement in the parish. They also administer the Vaccination (Scotland) Act, 1863. They must appoint a vaccinator for the vaccination of defaulters. They levy the school rate under the Education (Scotland) Acts. They make returns under the Local Taxation (Scotland) Returns Act. They have also certain duties under the Local Government (Scotland) Act, 1889, in distributing sums for poor law medical relief and sick-nursing. Further, under the Prevention of Cruelty to Children Act, 1894, they must provide for the reception of children. They appoint the registrars of births, marriages, and deaths. They have powers dealing with burial-grounds. They have power to make representations to the district committee or the county council regarding rights of way, erection of sign-posts and direc-

tion notices, formation of special lighting or scavenging districts, provision of public baths. There are other minor powers and duties.

To sum up, a county is managed by three bodies—the county council, the district committee (or council), the parish council; and these three are related to each other, to the burghs, to the Local Government Board, and to the Secretary for Scotland. The local management of education, which in England has been transferred to the county councils, is in Scotland still in the hands of School Boards.

Town Council.—Town council is the name given to the governing body of any burgh, including a royal burgh, parliamentary burgh, burgh incorporated by Act of Parliament, police burgh, and any other burgh within the meaning of the Burgh Police (Scotland) Act, 1892. These terms indicate the various forms of burgh, but the organization in all is substantially the same. The town council consists of provost, magistrates, and councillors.

They are elected on the same franchise as the parish council of a burgh. They hold office for three years. The number of members in a town council is fixed according to a scale of population. A town of less than ten thousand inhabitants has a council of nine members, including three magistrates, of whom the provost is chief; a town of from two hundred thousand to five hundred thousand has seventy-five councillors, including twelve magistrates; and a town of over half a million has ninety councillors, including fifteen magistrates. Glasgow is the only Scottish town with over half a million inhabitants. For voting purposes, the burgh is divided into wards, each ward having an allocated number of representa-

tives. The provost and magistrates are elected by the councillors from among themselves. The town council appoints a town clerk, a town clerk depute, a treasurer and collector, surveyor and master of works, medical officer, sanitary inspector, inspector of cleaning, chief constable, and many other officers permanent or temporary.

The town council is the local authority for public health, and as such administers the public health and related statutes. It controls the police, except in small burghs, where the police are under the control of the standing joint committee of the county. It regulates streets, buildings, sewers. It may own gas works, water works, public baths, tramways, electric-light works, public parks, and the like. It regulates lighting, cleaning, sanitation, slaughter-houses and abattoirs. It is local authority for the Contagious Diseases (Animals) Acts. It has powers of assessing and borrowing for all these objects. The magistrates are the immediate licensing authority. In many towns they form the Dean of Guild Court or building committee. They are the police court for trial of minor offences. The town council may make by-laws for a great many purposes; such by-laws, as a rule, require the sanction of the sheriff of the county, or some central authority—the Local Government Board or the Secretary for Scotland. There are many other powers and duties. The principal statutes affecting town councils are the Burgh Police (Scotland) Acts, 1832 and 1903, and the Town Councils (Scotland) Acts, 1900 and 1903. Many burghs are regulated by special acts of Parliament. See LOCAL GOVERNMENT BOARD and SECRETARY FOR SCOTLAND; also *The Councillor's Manual*, by Abijah

Murray (7th ed. 1905); *Parish Council Guide for Scotland*, by J. Patten Macdougall and J. M. Dodds (1894); *Local Government in Scotland*, by Mabel Atkinson (1904).

(3.) IN IRELAND as it now exists is the result of a long and complicated history. The governing bodies are county councils, district councils, borough councils, joint committees of county councils and infirmary or fever hospital managers, boards of guardians. The central authorities are the Local Government Board and the lord-lieutenant in council.

County councils are elected by the parliamentary electors and 'those persons who, but for being peers or women, or being registered as parliamentary electors elsewhere, would be entitled to be entered on the parliamentary register.' This is also the franchise for district councils and boards of guardians. In Ireland there are thirty-three county councils, exclusive of the six county boroughs—Dublin, Belfast, Cork, Londonderry, Waterford, and Limerick. The county councils manage the roads and bridges; subject to the Local Government Board, they approve of the road expenditure of the district councils; they are responsible for the care of the lunatic poor in the county; they contribute to county infirmaries and fever hospitals, and have a share in the management, having representatives on the joint committees; they have certain powers in connection with railway, tramway, and harbour guarantees; they have the administration of technical education along with the district councils; they have power to arrange with the reformatory and industrial school managers for the reception of children.

District councils, as indicated above, are elected on the same franchise as county councils.

There are ninety urban district councils, including the county boroughs named and other boroughs. There are twenty-nine small towns with a separate municipal organization, but for some purposes these form part of the rural districts. There are two hundred and thirteen rural districts, each with a district council. The chief work of the district councils is the administration of the Public Health Acts and the maintenance of the part of a main road within their district. The district councils have also certain powers to provide house accommodation and allotments under the *Labourers (Ireland) Acta.*

Borough or urban district councils have, within the borough area, the same powers as the district councils and county councils in the rural areas. The chief difference between the county boroughs and other urban boroughs is that the county boroughs have entire control of the roads within their area, while, for the rest of Ireland, the county councils have the power to determine the main roads, one half of the expense coming off the whole county, and the other half off the urban and rural districts in which the road is situated. The powers of boroughs in general are much the same as in Scotland and England.

Boards of guardians have as their main duty the administration of the poor law. There are one hundred and fifty-nine unions in Ireland, and each union has its board of guardians. For electoral purposes, the union is divided into electoral divisions, of which there are some three thousand four hundred and thirty-eight. The guardians may administer indoor relief in workhouses or give outdoor relief. Each union has a workhouse and a workhouse infirmary. The latter is distinct

from the county infirmary. The guardians administer the vaccination law. They have charge of the union dispensaries and medical charities. They have certain powers of supplying seed potatoes and of assisting emigration. They are subject to the control of the Local Government Board, which in certain circumstances may dissolve a board of guardians and appoint paid officers to discharge the duties. During the famine year of 1847-9 this power was exercised thirty-eight times. The authorized inspectors of the Local Government Board may attend meetings of the guardians and supervise the administration of relief. No 'minister of religion' can become a guardian. The appointment of union officers is subject to the approval of the Local Government Board, which has also powers to form new unions.

See *Royal Commission on Local Taxation* (Final Report, Ireland, 1902, appendix). The quotations are from the appendix, which contains a good *résumé* of the growth of local government in Ireland from the Union on to the great Act of 1898.

Local Government Board. In England this department of the government was established by an act of 1871, which transferred to it all the powers of the Poor Law Board of 1834, and certain powers relating to local government previously exercised by the Home Secretary and the Privy Council. The board consists of a president (always a member of the government, and generally a cabinet minister) and of certain *ex officio* members—viz. the Lord President of the Council, the principal secretaries of state, the Lord Privy Seal, and the Chancellor of the Exchequer. There are also a parliamentary secretary, a permanent secretary, a legal adviser, and a large staff of assistant secretaries,

medical officers, inspectors, auditors, clerks, and other officials. The board has large powers conferred by numerous statutes relating to the relief of the poor, local government, and public health.

The Local Government Board for Scotland was created by the Local Government (Scotland) Act, 1894, and succeeded to the powers and duties of the Board of Supervision, abolished by the act. The board consists of the Secretary for Scotland (who is president), the solicitor-general for Scotland, the under-secretary for Scotland, a vice-president, a legal member, who must be an advocate of at least seven years' standing, and a medical practitioner, specially qualified in sanitary science, or who has had five years' experience as medical officer of health of a county or burgh. The last three members are paid. The offices of the Board are in Edinburgh, and it is the central authority for local government in Scotland.

The Local Government Board for Ireland was created by the Local Government Board (Ireland) Act, 1872, and succeeded to the powers of the Poor Law Commissioners abolished by that act, and to certain powers of the lord-lieutenant, the Privy Council, and the chief-secretary to the lord-lieutenant, conferred by the enactments mentioned in the schedule to the act. The board consists of the chief-secretary and the under-secretary to the lord-lieutenant, together with a vice-president and two other members, one of whom must be a specially qualified medical practitioner.

In Scotland and Ireland, but not in England, a medical practitioner is a member of the board, and thus shares in the executive responsibility. In England the medical department is essentially

advisory, and has no independent executive powers.

See articles on LOCAL GOVERNMENT, LONDON — GOVERNMENT, POOR LAW, PROVISIONAL ORDERS, and PUBLIC HEALTH, and the authorities there referred to.

Local Marine Board. See MERCHANT SHIPPING.

Local Option, or LOCAL VETO, is the phrase which embodies one of the principal objects of the United Kingdom Alliance. What exactly is meant by the phrase was explained by Sir Wilfrid Lawson on June 18, 1880, when, for the second time within the space of three months, he proposed his local veto resolution. The resolution itself was in these terms: 'That, inasmuch as the ancient and avowed object of licensing the sale of intoxicating liquors is to supply a supposed public want without detriment to the public welfare, this house is of opinion that a legal power of restraining the issue or renewal of licences should be placed in the hands of the persons most deeply interested and affected—viz. the inhabitants themselves, who are entitled to protection from the injurious consequences of the present system by some efficient measure of local option.' The resolution was carried by a majority of twenty-six. A similar motion was approved of by the House of Commons on June 14, 1881, by a majority of forty-two; and again on April 27, 1883, by a majority of eighty-seven. It was rejected, however, when moved on April 29, 1891.

Local option prevails in many of the British colonies. Canada has a local-option law which is known as the Scott Act, and was passed in 1878. It has been largely taken advantage of in the maritime provinces, where some towns and districts have adhered to the principle for a quarter of a cen-

tury. In Quebec, except in the English-speaking section, it has been little favoured, and Ontario has gone back to the licensing system. In S. Africa there is restriction regarding the sale of liquor to native. In Australia the practice of the various states of the Commonwealth differs. Victoria is a local-option state, while New South Wales allows a mild form of local option with regard to new licences. In the crown colonies the systems of regulation vary a great deal, but only one, the Bahamas, has adopted local option. In all of them regulations regarding the sale of liquor to natives are strictly enforced. In the United States the practice varies. Some states, such as Maine and Kansas, have a prohibitory law for the state; others, such as Massachusetts and New Hampshire, have local-option laws; others again, such as New York, have high licence and stringent regulations. See PUBLIC HOUSE TRUSTS, and LICENCE.

Local Rank, military, may be conferred on any officer in order to enable him to undertake more responsible duties, and to give him the necessary seniority over those who come under his command. Local rank only holds good in the district for which it is granted.

Local Taxation Grants, grants made out of the imperial exchequer in aid of local taxation. In 1888 Local Taxation Accounts were established for England, Scotland, and Ireland respectively, to which were paid the proceeds of certain taxes, but the Finance Act, 1907, directed that in future all these taxes should be paid to the exchequer, and that the Consolidated Fund should pay to the Local Taxation Accounts the amount which these taxes would have produced if they had remained unaltered. The

grants are calculated as follows: (1.) *The Probate Duty Grant*. Till 1894 this consisted of one-half of the sum paid as probate duty. The Finance Act, 1894, abolished probate duty, but, by sec. 19, it directed that an amount equal to one and a half per cent. on all personal property formerly chargeable with probate duty should be paid to the Local Taxation Accounts. Four-fifths of this grant is paid to county councils in England and Wales, to be applied for various purposes directed by the Local Government Act, 1888. Eleven-twentieths of the remaining one-fifth is paid to the Local Taxation (Scotland) Account, and applied to certain purposes mentioned in sec. 22 of the Local Government (Scotland) Act, 1889, one being the relief of school fees, and nine-twentieths is paid to the Guarantee Fund under the purchase of Land (Ireland) Act, 1891. (2.) *The Customs and Excise Duty Grant*. This is the equivalent of a duty of 6d. per gallon on spirits and 3d. per 36 gallons on beer. It is directed by the Customs and Inland Revenue Act, 1890, to be divided between England, Scotland, and Ireland in the same proportions, and paid to the same accounts as the probate duty; and an act of the same session (a. 60) provides for its application, mainly to educational purposes. (3.) *The Local Taxation Licences Grant*. The proceeds of licences for the sale of intoxicating liquors, for dealing in game or tobacco, for keeping dogs, carriages, or men-servants, using armorial bearings, carrying a gun, or killing game, or carrying on the business of a pawnbroker, auctioneer, appraiser, house-agent, plate dealer, hawker, etc., were in England and Wales paid to the county council, and in Scotland to the Local Taxation (Scot-

land) Account, to be applied in each case in the same way as the probate duty grant. Now certain of these licences are collected by the county councils, a grant of £40,000 being paid to cover the cost of collection. The Local Taxation Accounts do not benefit by the increased licence duties under the Finance (1909-10) Act, 1910. Under the Local Government (Ireland) Act, 1898, a similar payment is made to the Local Taxation (Ireland) Account together with an additional grant of £79,000 a year. (4) *The Agricultural Rates Grant* paid in England and Wales to meet the deficiency caused by the exemption of agricultural land from half the rates, under the Agricultural Rates Act, 1896. An equivalent grant of eleven-eighths of this grant is paid to the Local Taxation (Scotland) Account, and the Local Taxation (Ireland) Account receives a grant equal to half the amount of the rates raised on agricultural land. (5) *The Increment Value Duty Grant*. Half of the increment value duty imposed by the Finance (1909-10) Act, 1910, was to be paid to a separate account for the benefit of local authorities, but this grant was withdrawn by the Finance Act (1911).

Local Taxation Returns. By the Local Taxation Returns Act, 1860, the clerks of all local authorities in England empowered to levy rates were required to make annual returns to a secretary of state as to the amount and expenditure of the rates levied. Additional returns were required by later enactments, and since 1877 they are all sent to the Local Government Board, where an abstract of them is prepared which is annually laid before Parliament. Similar returns are made in Scotland to the Secretary for Scotland, under

tracts of them are also laid before Parliament.

Locana, vil., Italy, in Piedmont, prov. of and 26 m. N. by w. of Turin. Pop. 6,000.

Locarno, tn., canton Ticino, Switzerland, at mouth of riv. Maggia, 12 m. w. by s. of Bellinzona, on upper end of Lake Maggiore. It contains the pilgrimage church of Madonna del Sasso. Pop. 3,800.

Loc. cit., loco citato—i.e. ‘in the place quoted.’

Loch, HENRY BROUGHAM, FIRST BARON LOCH (1827-1900), British administrator; was Lord Gough's aide-de-camp in the Sutlej campaign (1846); served in the Crimea (1854); went on the embassy to China (1857-60); and was private secretary to Lord Elgin (1860). After the surrender of the Taku forts he was seized by the Chinese officials, imprisoned, and tortured. He returned to England in charge of the Tientsin treaty (1860). He was governor of the Isle of Man (1863-82), of Victoria (1884-9), and of the Cape (1889-95). He wrote an account of Lord Elgin's second embassy to China (1869). He was raised to the peerage (1895).

Lochaber, dist. Inverness-shire, Scotland, bounded by Lochs Leven, Linnhe, and Eil. The district abounds in wild glens, broad moors, and lofty mountains.

Lochee of Gowrie, EDMUND ROBERTSON, BARON (1845-1911), British politician and lawyer, was born at Kinnaird, Perthshire. In 1871 he was called to the bar at Lincoln's Inn, and was for some years professor of Roman law at University College, London. Mr. Robertson was a civil lord of the Admiralty (1892-5), and on the formation of the Campbell-Bannerman administration became secretary to the Admiralty, 1905-8). He was

Loches (anc. *Leuox*), tn., dep. Indre-et-Loire, France, on the l. bk. of the riv. Indre, 23 m. s.e. of Tours; has a famous castle, built by Charles VII. Pop. 5,000.

Lochgelly, police bur. of Auchterderran par., S.W. Fifeshire, Scotland, 8 m. N.E. of Dunfermline; has collieries and iron works. Pop. (1911) 9,076.

Lochgilphead, police bur., Argyllshire, Scotland, at the head of Loch Gilp, 2 m. N.N.E. of Ardrishaig. Pop. (1911) 921.

Lochieven. See LEVEN (2).

Lochmaben, parl. and roy. bur. and par., Annandale, Dumfriesshire, Scotland, 10 m. N.E. of Dumfries. In the Castle Loch, 1 m. s.e., are the ruins of Lochmaben Castle, formerly the seat of the Brucea. Pop. (1911) 1,056.

Locke, JOHN (1632-1704), the parent of English philosophical thought in the 18th century, was born at Wrington, in Somersetshire. The desultory home-training at Wrington and later at Beluton was followed in 1646 by six years at Westminster School, at that time under Puritan control. In 1652 Locke entered Christ Church, Oxford.

It was at Oxford that Locke was directed to his life-work. A disposition at once metaphysical and religious had attracted him to theology, but a growing taste for experiment in nature engaged him in the end in physical research and the study of medicine, and before 1666 he engaged in medical practice. In 1667 Lord Ashley (soon after the first Earl of Shaftesbury, the brilliant statesman of Charles II.'s reign) happened to visit Oxford, and was so charmed by young Locke, to whose medical care he had been entrusted, that 'he desired him to look upon his house in London as thereafter his home.' Accordingly, in 1668, Locke exchanged Christ Church for Exeter House

tained his studentship at Oxford, and had inherited Beluton from his father, he shared fortune during the fourteen following years with the famous English statesman.

Locke's new duties were congenial to his taste and attainments. In 1672 he was made secretary of the Board of Trade under Lord Shaftesbury, in which office, with Exeter House for his home, he worked with 'singular exactness' till 1675, when Shaftesbury quarrelled with the court, resigned high office, and joined the 'Country Party.' Thus relieved of official cares, Locke retired for four years to France, where, at Montpellier and in Paris, he availed himself of this signal opportunity for prosecuting a work he had lately contemplated. It was then that the chief enterprise of his life took shape, in the form of the *Essay concerning Human Understanding*, published fifteen years later. In 1679 he returned to London, and resumed his place in Shaftesbury's household, now at Thanet House in Aldersgate Street.

Locke's movements in England for the next few years are obscure. He was unjustly suspected of treason on account of his relations with Shaftesbury. Before the end of 1683 he was an exile in Holland.

In 1688 the course of English politics opened Locke's way back to England. He returned to begin his life of authorship. His first appearance took the form of a characteristic *Letter for Toleration*, prepared in Holland, and published anonymously at Gouda in 1689—a philosophical argument in favour of freedom of thought addressed to his friend Limborch. An English translation appeared soon after in London, which occasioned controversy and drew

Toleration in 1690. In the same year he published *An Essay on Civil Government*, in vindication of the principles of the revolution, which has been considered by a high authority as the most important contribution ever made to English constitutional law by an author who was not a lawyer by profession. But 1690 is chiefly memorable in Locke's history for the publication of the famous *Essay concerning Human Understanding*. He received £30 for the copyright. A like sum was given to Kant ninety-one years after for his *Kritik*, the philosophical complement to this *Essay* of Locke. The *Essay* and the *Kritik* are the chief springs of all later philosophy. The one, with its critical individualism and empiricism, dominates in the 18th century; and the other, with its critical idealism, inaugurates the dominant thinking of the 19th. Animated by the modern spirit, Locke saw in 'experience' the measure of human knowledge of the realities amidst which man finds himself. 'Let us,' he says, 'suppose the mind to be white paper, without any ideas. Whence has it all the materials of reason and knowledge? To this I answer in one word—from experience. Our observation, employed either about external sensible objects, or about the internal operations of our minds, is that which supplies our understandings with all the materials of thinking. These two are the fountains of knowledge.' There are spiritual elements dimly present in the *Essay*, of which some who claimed it as their guide took no account. As interpreted by Condillac and the French Encyclopédistes, the *Essay* resolves into materialism; and Hume, interpreting Locke's 'experience' as fundamentally accidental association of transitory phenomena, and so-called 'human know-

successive moments. On the other hand, Berkeley's theistic conception of the universe, which sees active intelligence inevitably at the root of all the data of experience in sense, is an outcome from the *Essay* of Locke in an opposite direction. But it was Kant who so investigated the intellectual presuppositions that are tacitly involved in experience as to articulate the contents of reason that necessarily underlies experience, thus supplementing the work of Locke. The critical analysis of our knowledge, initiated by Locke and elaborated by Kant, is, in its consequences, the most important philosophical step in advance made by modern thought. The *Essay* secured an extraordinary popularity, unprecedented in the case of a philosophical treatise.

By 1691 two winters of authorship in London had aggravated Locke's chronic ailments. It was then that a rural home in the secluded manor-house of Otes in Essex opened to receive him. It was the country house of Sir Thomas Masham and Lady Masham, the accomplished daughter of Cudworth, with whose family Locke was intimate before his exile in Holland. Here he lived as a member of the Masham family during the fourteen remaining years of his life, with as much domestic happiness and literary opportunity as was consistent with broken health and occasional official visits to London—for in 1696 he was made a commissioner of trade, 'a very honourable employment, with £1,000 a year of salary annexed.' A *Third Letter for Toleration* (1692); *Thoughts concerning Education* (1693); an amended edition of the *Essay* (1694), followed by a third in 1695; financial tracts on the *Rate of Interest* (1691) and on the *Coining of Silver* (1695);

of Christianity (1695), followed by *Vindications* of the same against hostile critics (1695); three elaborate *Letters* in controversy with Bishop Stillingfleet concerning doubtful passages in the *Essay on Human Understanding* (1697-9); and a fourth edition of the *Essay*, further amended, in 1700, all bear testimony to the busy mind at work at Otea.

The last four years of Locke's life were largely devoted to exegetical annotation of the *Epistles of St. Paul*, in which he applied the liberal principles of his *Essay* to the interpretation of records which he revered in the spirit of the Puritanism of his youth, now enlightened by more comprehensive vision. The commentaries were given to the world soon after his death. In 1706 a volume of posthumous works appeared, followed in 1720 by another edited by De Maisiaux.

Many collected editions of Locke's *Works* (which first appeared in 1704) have been published, the best that of Bishop Law (4 vols. 1777). There are some forty editions of the *Essay*, the latest edition being Professor Campbell Fraser's, with notes and prolegomena (1894). It was translated into French (1700), and into Latin (1701). See Leibniz's *Nouveaux Essais* (1765); Lord King's *Life of John Locke* (1829); Schärer's *John Locke* (1860); Cousin's *La Philosophie de Locke* (1861); Fox Bourne's *Life of Locke* (1876); Fraser's *Locke*, in *Philosophical Classics* (1890); the same author's *John Locke as a Factor in Modern Thought* (1905, etc.); Hertling's *John Locke und die Schule von Cambridge* (1892); Martinak's *Die Logik John Lockes* (1894); and Ollion's *La Philosophie Générale de John Locke* (1909).

Lockerbrie, mkt. tn., Annandale, Dumfriesshire, Scotland, 10 m. N.W. of Dumfries; has

large lamb fairs every year in August. Pop. (1911) 2,450.

Locker-Lampson, FREDERICK (1821-85), English poet; served for some years in Somerset House and at the Admiralty, until his health broke down in 1849. In 1857 he published a volume of original verse, under the title of *London Lyrica*, which appeared in a great variety of editions between that year and 1883. His other publications were two anthologies, *Lyra Elegantiarum* (1867) and *Patchwork* (1879); an autobiography posthumously published as *My Confidences* (1896; new ed. 1910); and a catalogue of the valuable library at Rowfant, where he resided for the last twenty years of his life. His original verse is neat and finished in style, and his literary taste was excellent.

Lockhart, JOHN GIBSON (1794-1854), biographer of Sir Walter Scott, born at Cambusnethan; educated at Glasgow and Oxford, and, after studying law in Edinburgh, became an advocate in 1816. His tastes led him towards literature, and his first work was a translation of Schlegel's *History of Literature*. He contributed frequently to *Blackwood's Magazine*, and is believed to have collaborated with James Hogg in the *Chaldee Manuscript*, one of the early successes of Maga. Lockhart made the friendship of Sir Walter Scott, and in 1820 married his daughter Sophia. About this time he wrote the historical part of the *Edinburgh Annual Register*, and in 1819 published *Peter's Letters to his Kinsfolk*, a description of Edinburgh society. Into it was infused not a little of Lockhart's irrepressible satire, which gave rise to some bitterness among Edinburgh Whigs. In 1826 Lockhart accepted the editorship of the *Quarterly Review*, which he conducted with marked success until 1853. At this time he wrote

a 'Life of Burns' for *Constable's Miscellany* (1828), and a 'Life of Napoleon' (1829) for *Murray's Family Library*, the publication of which he superintended. In 1838 appeared the last volume of his *Life of Scott*—his greatest work. Lockhart also published four novels; *Ancient Spanish Ballads* (trans. 1823); a *History of the late War, with Sketches of Nelson, Wellington, and Napoleon* (1832); and *The Ballantyne Humbug Handled* (1839). See Lang's *Life and Letters of Lockhart* (1897); Croker's *Memoirs* (1884); Smiles's *Memoirs of John Murray* (1891); and Ormsby's *Memories of Hope-Scott* (1884).

Lockhart, WILLIAM EWART (1846–1900), Scottish painter, studied in Edinburgh, where he resided until he removed to London (1887). His chief works were concerned with Spanish and Majorcan subjects; among them, *The Orange Harvest, Majorca*, *The Cid and the Five Moorish Kings*, and *A Church Lottery in Spain* are of special merit. By Queen Victoria's command he painted the jubilee celebration in Westminster Abbey (1887).

Lockhart, SIR WILLIAM STEPHEN ALEXANDER (1841–1900), British general; entered the Indian army (1858); served in the Bhutan campaigns (1864–6), and accompanied the Abyssinian expedition (1867–8). He rendered valuable service in the Afghan war (1878–80) and the Burmese war (1886–7). He commanded the Punjab frontier force (1890–5), and showed marked ability in his conduct of the Tirah campaign (1897). He became commander-in-chief in India (1898).

Lock Haven, co. seat of Clinton co., Pennsylvania, U.S.A., on Susquehanna R., 20 m. w.s.w. of Williamsport. Pop. (1910) 7,772.

Lockjaw. See *TETANUS*.

Lockport, city, New York, U.S.A., co. seat of Niagara co.,

25 m. N.N.E. of Buffalo, and is on the Erie Canal; manufactures iron goods, paper, woollens, furniture, etc. Pop. (1910) 17,970.

Lockroy, ÉDOUARD ETIENNE ANTOINE (1838), French politician and journalist; studied art in Paris, and accompanied Réan as secretary and draughtsman to the Holy Land (1860–4). On his return he became a journalist in Paris, and was elected to the National Assembly, resigning at the communal outbreak. He was re-elected later, and became minister of commerce (1886), of education (1888), and minister of marine (1895–6 and 1898–9). He is an authority on naval matters.

Locks and Keys. Primitive fastenings consisted of intricately knotted thongs, seals, or the branch or plain wooden bar placed across the inside of a door. Of the first, the Gordian knot is an example; of the second, we have numerous specimens in clay, used upon Egyptian corn jars, as well as many Scriptural and classical references. From the horizontal wooden bar, made at an early period to slide in staples on the back of the door and to fit a hole in the door-post, has arisen the modern lock. To move such a bar through a hole from the outside, or to release whatever held it, a cranked or curved piece of metal with straight handle would be suitable. Such hook-like or sickle-shaped keys have been found in many parts of Northern Europe, those in England being usually associated with remains attributed to the Celtic period.

It is obvious that the simplest method to prevent the bolt or bar from sliding would be to bore a vertical hole into it through the top of one of its staples, and to insert a dropping peg into the hole. In this case the function of the key would be first of all to remove the peg by lifting it up, thus giving freedom to the bolt.

The Egyptians fashioned their locks upon this idea, introducing a cluster of such dropping pegs or pins. They made the portion of the bolt into which the pins dropped hollow, so that their lower ends could be reached by the key from below; and the key they fashioned had pins upon it to correspond with those holding the bolt. Their lock or bolt was fastened upon the outside of the door. A lock like that of Egypt, but not quite identical with it, is found widely distributed in many out-of-the-way places in Europe (Fig. 1). The illustration is made

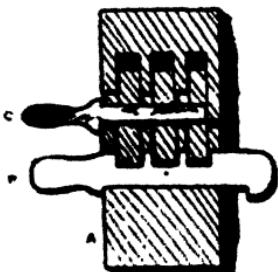


FIG. 1.

from one on a barn door near Thun, Switzerland, and shows its back, after removal. In this, A is the staple or case, and B is the bolt sliding across it. The bolt is secured by flat dropping pins, which fall into notches cut in its edge. The pins are squared in section, and to lift them the key c is provided with projections. The key is inserted through the side of the staple, and not into the end of the bolt, as in that of Egypt.

The commonest form of the Roman lock is essentially based on that of Egypt, but the bolt is now a small one, often of bronze, and the dropping pins that hold it are round, square, or triangular in section, and are pressed downwards by a spring. The projec-

tions on the key are shaped so as to correspond with the ever-varying shapes and positions of the pins. The keys introduced do not pass into the end or side of the bolt, but into a casing, as in modern locks, and catch the bolts on their lower surfaces. When the key has been introduced through the keyhole and has been given a quarter turn to push up the pins out of the way, a horizontal extension of the key-hole allows the user to slide it sideways and so move the bolt into its unlocked position.

The Romans, however, had many other varieties of locks, prominent amongst them being those in which the bolt was kept locked by the projection of an expanding spring or springs, the end of which butted against a stop. In locks based on this principle, the function of the key was to pull back or compress the springs, and when these were flattened the key itself moved the bolt to and fro. This mechanism was largely adopted in their padlocks, and we now come across a very curious fact—viz. that the present-day padlock of China and Japan (Fig. 2) is



FIG. 2.

made to act exactly in the same way as the Roman. As Roman togas probably had no pockets, keys which had to be carried on the person were often formed with finger rings on their stems (Fig. 3).

Early English and mediæval keys of bronze have their 'bows' formed in ecclesiastical shapes—lozenges, trefoils, quatrefoils, and the like. Their shanks are round,

and the projecting 'bits' that work the bolt are stepped and cut as if to avoid fixed wards inside the lock case. The shanks



FIG. 3.

were either hollow or terminated in a solid point, thus allowing them to work in the lock on a fixed centre. They were the direct mechanical ancestors of the keys of the present day.

The lock bolts of the period have a notch, technically called a 'talon,' in their lower edge to receive the nose of the keybit, and thus be moved to and fro. There now also appears, presumably for the first time, a pivoted tumbler or lever in place of the early dropping pins; this 'dogs' the bolt, and has to be moved up out of the way by the key as it rotates, before engaging with the bolt.

But from an early date, and onwards to the close of the 18th century, the chief method adopted to attain security (with the exception of the letter padlock) was the use of fixed internal obstructions in the lock case, the bit of the key being formed so as to escape them as it was turned to reach the bolt. These obstructions are called 'wards,' and were made of small, bent strips of iron,

brazed together inside the circular casing, the whole being called a 'box of wards.'

The French workers excelled both in key and lock fronts, many of the latter being so artistic and valuable that their owners removed them when changing residence. Jousse, a French locksmith, writing in 1627, gives many interesting details. Many of the examples in his drawings are unattractive, but his best is reproduced in Fig. 4. This is somewhat like the famed Strozzi key, said to have been made by Benvenuto Cellini.

To obtain full information on the subject of mediæval and renaissance locks and keys, refer-



FIG. 4.

ence may be made to the able and comprehensive notes of Mr. Starkie Gardner in the catalogue of a Loan Exhibition of Steel

Work held at the Burlington Fine Arts Club (Batsford, London, 1900).

The first advance in the mechanics of modern lock-making was made in 1774 by Barron, who placed two pivoted catches or tumblers to guard the bolt, instead of one only, as in the 13th-century lock. He also made them in such a way that if either were lifted up beyond the height requisite to free the bolt, the bolt still remained locked.

This was followed in 1784 by the Bramah lock, a distinct novelty at the time as regards its kinematic elements. In this a thick disc of metal is housed in a casing or barrel, and, when free to turn, actuates the bolt of the lock by means of a pin on its under side. But it is normally kept from turning by several sliding steel strips or feathers, which lie in slots cut around its circumferential edge. These sliders, as they are called, are pressed upwards by springs, and have to be pushed downwards by the key. Notches to fit the sliders are cut in the end of the key-barrel. These notches are of varying depth, and consequently push some of the sliders in more than others—hence the different combinations. When they have all been pushed down their correct distances, little side openings in them match the edges of a fixed diaphragm, and they are free to pass round the inside casing together with the central disc that carries them, the turning of which is also done by the key.

The Chubb detector lock was originally patented in 1818, and has been altered, added to, and improved many times since that date (Fig. 5). In its simplest form it consists of a bolt A, into which is firmly riveted the projecting stud or stump B. The movement of the bolt A is governed usually by six double-acting tumblers—called

also levers—C working on the stump D, and always pressed downwards by the springs E. The tumblers have internal openings or 'racks,' two of which are connected by a passage or 'gating' wide enough to allow the stump B to pass. The 'gatings' are in different positions, so as to accord with the varying heights of the steps on the key in relation to the tumbler against which each step works. After the key has been introduced into the lock and turned about ninety degrees, it commences to lift the tumblers; and by the time its bottom or bolt step is in contact with the 'talon' of the bolt their 'gatings' all coincide, thus providing

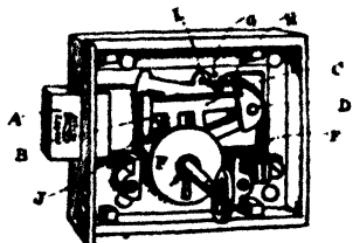


FIG. 5.

a clear passage for the stump B to pass along. The keyhole is protected by a barrel and curtain F, which entirely closes it up while the key is being turned. The detecting mechanism is explained by the spring G, the projecting portion on the bottom tumbler H, and the pin I, which is also mounted on the bottom tumbler, and so placed that all the other five can operate it if they are lifted too high. If a pick or wrong key is introduced into the lock which lifts any one of the tumblers beyond its proper height, this motion is communicated to the bottom one through the pin I, and its projection H gets caught on the spring G. In this condition the lock cannot be

opened in its ordinary way, even by its proper key; and the owner, therefore, is notified by the lock itself that some unauthorized person has been tampering with it. To put it once more into working order, the owner has to turn his key the reverse way as if to lock it.

The Yale lock, very popular in the United States, was invented about 1860. It consists of a barrel which turns in a cylinder to move the bolt. It is a 'tumbler' lock, having five divided pin tumblers which are gradually raised by the key until they are all exactly to the line between the barrel and the cylinder, both the small flat key and the keyway having a peculiar form of cross section, making these parts interlocking throughout their length.

The lock chiefly used on safes in the United States consists of concentric discs or wheels, each having a notch on its edge. On the outside of the safe a dial is mounted on the spindle which passes through the door to work the wheels. The circumference of the dial is divided into one hundred divisions, and the operator has to turn it successively to the right and left until the notches of the discs all coincide, when a 'dog' or catch falls into them, withdrawing the bolt of the lock as it falls (Fig. 6).

A most important development in recent years has been the application of watch or time movements, so as to regulate the period during which an obstructing bolt is to be kept in its locked position. In a suitable case mounted on the inside of the safe or strong-room door are three—sometimes four—distinct chronometer 'movements.' Each 'movement,' instead of having ordinary clock hands, possesses a simple disc divided into seventy-two hours or three days, and is arranged to make one revolution

in that time. Each disc has a pin projecting from it, so placed as to move or slide a simple rod when the time has come for unlocking, the rod in its turn releasing the obstructing bolt; this then falls down by its own weight out of the

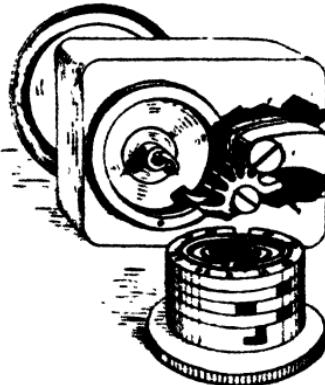


FIG. 6.

way (Fig. 7). In setting this lock, it is only necessary to wind up each 'movement' for the predetermined number of hours that the safe door is to remain shut, and this precludes the use of any other locks with which the door may

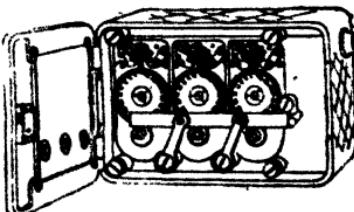


FIG. 7.

also be fitted until the proper time for opening has arrived.

Lockwood, Sir Frank (1846-97), English lawyer, educated at Manchester and Caius College, Cambridge, and called to the bar (1872). He became q.c. (1882), and recorder for Sheffield (1884).

In 1883 he was returned as one of the Liberal members for York, and held the seat till his death. He was solicitor-general in 1894. An excellent draughtsman, he made amusing sketches in court and in the House of Commons, afterwards published as *The Frank Lockwood Sketch-Book* (1898). His *Lecture on the Law and Lawyers of Pickwick* (1894) reached a second edition. See Birrell's *Sir Frank Lockwood* (new ed. 1910).

Lockyer, Sir Joseph Norman (1836), English astronomer, born at Rugby; entered the War Office (1857), acted as secretary to the Royal Commission on Science (1870), was transferred to the Science and Art Department (1875), and became director of the Solar Physics Observatory, South Kensington (1879). He independently originated (1868) the spectroscopic method of daylight chromospheric observation, and led nine eclipse expeditions (1870-1905). Theories of celestial dissociation and sidereal evolution from meteor swarms were advocated in his *Chemistry of the Sun* (1887), *Meteoritic Hypothesis* (1890), *The Sun's Place in Nature* (1897), *Inorganic Evolution* (1900), *Education and National Progress* (1906-7), and *Surveying for Archaeologists* (1909).

Locle, L.R., tn., Switzerland, in canton of and 10 m. W.N.W. of town of Neuchatel. The town is now one of the chief centres of the watchmaking industry, which dates from 1681. Pop. (1910) 12,696.

Locomotives. See STEAM-ENGINE.

Locomotor staxis, or TABES DORSALIS, is a nervous disease characterized by incoördination of muscular movements, and by trophic and sensory disturbances with involvement of the special senses, of which the eyes are chiefly affected. The cause of the

disease is obscure. Syphilis is a factor of the greatest importance, but does not account for all cases. Three stages are recognized—the pre-ataxic, the ataxic, and the paralytic. The disease is frequently arrested, and may remain stationary for years.

Locorotondo, comm., Italy, in Apulia, prov. of and 35 m. S.E. of Bari. Pop. 8,000.

Locri. (1.) Peoples of ancient Greece, the inhabitants of two districts each called Locria, of which the eastern lay south of Thessaly, along the coast of the Malian Gulf, enclosed by Doris and Phocis on the west. It was a fertile country. The western district, the country of the Locri Ozole, lay on the northern shore of the Corinthian gulf between Phocis and Aetolia; its chief town was Amphiessa. (2.) I. **EPIZEPHYRII** was one of the most ancient Greek colonies in S. Italy. It was situated in Calabria near the present Gerace, to the north of the promontory of Zephyrium, from which it derived its distinguishing designation, and was founded by Locrians from Greece in 683 B.C. It was renowned for the excellence of its code of laws, framed by Zaleucus in the 6th century B.C.

Löcse, Hungary. See LEUTSCHAU.

Locus, in mathematics, a curve or surface traced out by a point or line which has a limited freedom of motion determined by given geometric conditions. For example, all points in a plane at which a given straight line subtends a right angle lie on a circle with the given line as diameter; in space the locus similarly defined is a sphere.

Locus Standi. The term is used generally of a person's right to be represented or heard in any litigation, and technically of the right of a person or corporation, if injuriously affected, to petition

against a private bill. *Locus standi* is governed by the standing orders of the House of Commons. The following persons may petition:—Competitors; chambers of commerce and agriculture as to rates; miners' associations; municipal authorities; local authorities, as to lighting and water bills; county councils and private individuals who claim that they are injuriously affected by a tramway passing through their streets; and all persons whose land is taken compulsorily. Questions of *locus standi* are determined by the Court of Refugees.

Locust, an orthopterous or straight-winged insect belonging to the family Acriidae. In the article GRASSHOPPER some account of the general characteristics of the family will be found; it remains only to mention some of the more destructive forms of locust. The European form is *Pachytylus cinerascens*, found over a great part of the eastern hemisphere; but another species, *P. migratorius*, occurs in S.E. Europe. Other species of *Pachytylus* occur in Africa, and are often excessively destructive. In some of the African forms the migrations are performed not only by the winged adults, but also by the young before the development of the wings, when they are locally known as 'voetgangers.' The locust swarms show a great indifference to the nature of their food, and will eat anything green which comes in their way, and even, when pressed by hunger, attack the young of their own species.

The life history is similar in all cases. The female deposits a number of eggs in hard ground in a hole made for the purpose, and surrounds the eggs with a fluid which hardens into a capsule. After a period of varying length

the young hatch out, being like the parents, except that they have no wings, have shorter antennae, and are of smaller size. After successive moults they become adult and capable of reproduction.

Destruction of Locusts.—Where locusts are abundant, they may render agriculture almost impossible, and in consequence many methods of destruction have been advocated. In Cyprus the Mattei system has been adopted with remarkable success. In essence this consists in destroying the pests in the wingless stage by taking advantage of the fact that they are unable to climb up or over a smooth surface. The method adopted is to construct a canvas screen about four feet high along the line of march, and at intervals along the screen to dig pits. The locusts, on finding themselves unable to pass the screen, turn along it, and ultimately fall into one of the pits, where they are soon buried under the bodies of their fellows, until the pits are nearly full, when they are filled in with earth. So successful was the method that it is no longer necessary, and preventive measures are limited to the offering of rewards for live locusts, caught in large nets. In S. Africa, on the other hand, where the Mattei method has also been tried, it appears to have been much less successful, and parts of the country are periodically devastated by locusta. There, in addition to the Mattei method, the eggs are collected and destroyed, and attempts have also been made to inoculate the insects with disease, in the hope that this may be spread by the habit of cannibalism which prevails among locusts.

Locusta, or LUCUSTA, a notorious female poisoner in ancient Rome; employed by Agrippina to kill her husband, the Emperor

Claudius, for which service she was rewarded with large estates by Nero. She was executed in the reign of his successor, Galba.

Locust Tree, a name given to certain trees and shrubs belonging to the genus *Robinia*, order Leguminoæ, natives of N. America. They are hardy in this country. The common locust tree, or false acacia (*R. pseud-acacia*), bears in spring pendulous racemes of white, fragrant flowers, followed by smooth legumes. Of this species there are many useful varieties. *Ceratonia siliqua* (carob tree) is also called the 'locust tree,' as it has been supposed to have formed the food of John the Baptist in the wilderness. Hence it is also termed 'St. John's bread.' Its pods are the so-called 'locust beans.'

Lodelinsart, vil., Belgium, in Hainaut, 2 m. N. of Charleroi; has glass works. Pop. 9,000.

Lodes, or MINERAL VEINS, are metalliferous deposits occupying fissures in the rocks of the earth's crust. The term is somewhat loosely used even by professional miners, who do not distinguish between the beds, or contemporaneous deposits, and the veins, which are subsequent, and have been filled up at a later period than the beds they intersect. Veins, as a rule, do not coincide with bedding planes, except when these are at a high angle with the horizontal; the bedding is mostly less steeply inclined than the veins.

The vein is occupied by 'vein stuff,' which is not all metalliferous, but consists of gangue (or valueless minerals) and ore. Two or more ores, such as copper and tin or lead and silver, may occur in the same vein. The veins may be a hundred feet or more in breadth, or may only be a fraction of an inch. The broadest veins are usually most persistent both in

length and in depth, but all veins are liable to thin away or die out, though some have been traced for several miles. The Comstock lode has been followed to a depth of 3,000 ft., and many veins have been proved to almost equal depths; but it is probable that all fissures tend to close up in the deeper parts of the crust. The upper part of the vein, however, is usually the richest, owing to 'surface enrichment.' This is a consequence of the disintegration and removal of the outcrop as the ground is lowered by denudation. The heavier metallic particles are not so readily washed away as the gangue, but remain behind, and settle down into the loosened material of the vein. It is also thoroughly weathered and oxidized by the action of the atmosphere and percolating waters; hence the upper part of a vein is often excessively rich, and contains the minerals in a condition which renders extraction especially easy. The minerals also change in character, and though native metals, oxides, and carbonates are common above (in the zone of oxidation), sulphides, tellurides, and arsenides are most frequent below.

When beds of rock are much tilted, fissures may open parallel to the bedding planes, and may be infilled with ore deposits. Such veins are often very hard to distinguish from true beds, though quite different in their origin. In the main reef series in the Transvaal, beds of conglomerate, which have been so disturbed as to have a steep dip, have been infiltrated with gold, deposited, mostly at any rate, from solution in circulating waters. Although truly a bedded ore, this auriferous conglomerate, the 'blanket' rock, owes its richness to processes similar to those which determine the formation of

veins. In Australia many important mines are working saddle reefs, a curious type of vein which occurs as curved saddle-shaped plates between undulating beds of rock. Instances of this are the New Chum mine and the famous Mt. Morgan mine.

The origin of lodes has been the subject of much controversy. One hypothesis is that of lateral secretion. Its supporters point out that most rocks and rock-forming minerals contain small quantities of the useful metals, which may be dissolved out by water percolating through these rocks, and subsequently deposited in fissures. The other theory is that of 'ascension.' It is based on the fact that hot ascending mineral waters are known at the present day to contain metals in solution, and to deposit them on the walls of the passages through which they rise to the surface. The opinion that metalliferous veins were mostly formed in the earlier epochs of the earth's history is now no longer generally held, as it is known that some of them occur in Tertiary rocks, while others are being laid down at the present day. See Phillips's *Treatise on Ore Deposits* (1884, 2nd ed. by Professor Louis, 1896), Kemp's *Ore Deposits of the United States* (1900), and Thomas and M'Alister's *Geology of Ore Deposits* (1909).

Lodestone, a variety of magnetite, Fe_3O_4 , which acts as a magnet, exhibiting well-defined N. and S. poles. See MAGNETISM.

Lodève (anc. *Lutera*; Rom. *Forum Neronis*), tū., dep. Hérault, France, at confluence of Ergue R., 28 m. w.N.W. of Montpellier; manufactures army clothing, wine, and woollens. Pop. 7,400.

Lodge, EDMUND (1756-1839), English genealogist and biographer, born in London, entered the army (1771), but resigned his commission in 1773, and held the

offices of Lancaster (1793-1822), Norroy (1822-38), and Clarenceux (1838-39) herald successively. His chief work is a series of historical memoirs attached to *Portraits of Illustrious Personages of Great Britain* (1821-34). He also wrote historical and genealogical works, including *The Genealogy of the existing British Peerage* (1832), and his name still appears annually in connection with Lodge's *Peerage and Baronetage*.

Lodge, HENRY CABOT (1850), American historian, born at Boston. He edited the *North American Review* (1873-76) and the *International Review* (1879-81); was university lecturer on American history, and has been overseer of Harvard since 1884, and a United States senator from 1893 to 1905. His works include *Essays on Anglo-Saxon Land Law* (1885), *Short History of the English Colonies in America* (1881), *Studies in History* (1884), *Life and Letters of George Cabot* (1877), *The Story of the American Revolution* (1898), *Story of the Spanish War* (1899), and *A Fighting Frigate* (1902).

Lodge, SIR OLIVER JOSEPH (1851), English physicist, was born at Penkhull, Staffordshire; educated at Newport grammar school and University College, London, and graduated at London University as doctor of science (1877). In 1881 he was appointed professor of physics at the newly founded University College of Liverpool, and in 1900 became principal of the new Birmingham University. He was awarded the Rumford medal by the Royal Society in 1898, and was knighted in 1902. His numerous papers deal chiefly with electrical science. He is the author of a book on elementary mechanics containing some novelties of treatment. His *Modern Views of Electricity* (1889; new ed. 1892) and *Pioneers of Science* (1893; new ed. 1904) rank among the best of

popular scientific books. He has also written on *Signalling across Space without Wires* (3rd ed. 1900), on *Lightning Conductors and Lightning Guards* (1892), *Life and Matter* (1905), *The Ether of Space* (1909), and *The Survival of Man* (1909). His purely scientific work has been supplemented by excursions into the fields of spiritualism and psychical research. His public utterances on these as well as on scientific questions are always fresh and interesting. One of the latest problems to which he has directed attention is the mitigation of city fogs by forcing condensation by means of strong electric fields.

Lodge, RICHARD (1855), brother of Sir Oliver, born at Penkhull, Staffordshire; educated at Christ's Hospital and Balliol College, Oxford, where he took a first-class in modern history at Oxford (1877); after a brilliant career was a fellow and lecturer of Brasenose, till he was appointed as the first professor of history at Glasgow University (1894), being later elected to a similar chair in Edinburgh (1899). He has written *A History of Modern Europe* (1883); *Richelieu* (1896); *The Close of the Middle Ages, 1273-1494, Period III.* (1901), and *Political History of England, 1660-1702* (1910).

Lodge, THOMAS (?1538-1625), English poet and pamphleteer, the son of a lord mayor, was born probably at West Ham, Essex. He was educated at the Merchant Taylors' School, Trinity College, Oxford, and Lincoln's Inn, where he was called to the bar (1578); but he drifted into literary work. In 1580 he wrote a *Defence of Plays against the Puritans*. About 1587 he wrote *The Wounds of Civil War*, for the Admiral's men, and collaborated with Greene in *A Looking-Glass for London*

and *England*, for those of Lord Strange (1594). He also wrote satires and exquisite lyrical verse. Most of his later life was spent abroad. Among his works are:—Poems: *Scillaes Metamorphosis* (1589); *Phillis* (1593); *A Fig for Momus* (1595). Prose: *Alarum against Usurers* (1594); *For-bonies and Prisceria* (1584); *Rosalynde* (1590), the source of Shakespeare's *As You Like It*; *Catharos* (1591); *Euphues's Shadow* (1592); *William Longbeard* (1593); and *A Margarite of America* (1596). The best edition of Lodge's *Works* is that published by the Hunterian Club (1878-82).

Lodgings and Lodgers. An agreement to let furnished lodgings is an agreement relating to land under the Statute of Frauds, and in the absence of part performance cannot be enforced, unless in writing signed by the defendant. In the letting of furnished apartments there is an implied warranty that the rooms are fit for occupation. Any person who lets lodgings without disinfecting them after infectious disease, or gives a false answer to any question as to the existence of any infectious disease, is liable to a fine of £20, or, in the case of a false answer, to six months' imprisonment. A lodging-house keeper is not liable to the same extent as an inn-keeper if his lodger's property is stolen, but he must take reasonable care. A lodger's goods are no longer liable to be taken under a distress put in by the superior landlord, provided such lodger complies with the formalities of the *Lodgers' Goods Protection Act*, 1871, which does not apply to Scotland, and has paid his rent to his landlord, or, if in default in this respect, pays it to the superior landlord. A lodger's wearing apparel and other effects may be retained as security for his board and lodgings, but can-

not be sold without judicial authority. See LANDLORD AND TENANT.

Lodi, tn., prov. Milan, Lombardy, Italy, on the r. bk. of the Adda R., 18 m. s.e. of Milan; manufactures majolica, and Parmesan cheese and other dairy produce. The cathedral dates from 1158. Pop. (comm.) 28,000.

Lodoicea, a genus of fan-leaved palms, containing only one species, *L. Seychellarum*, a native of the Seychelles I., where it grows to a height of a hundred feet. The fruits are very large, sometimes weighing half a hundredweight.

Lodomeria (Vladimir), the Latin name for the Slav principality in W. Poland. It rose into power in the 12th century. From 1340 to 1772 Lodomeria owned allegiance to Poland, but in the latter year it became part of Galicia.

Lodz, tn., Piotrkow gov., Poland, W. Russia, 27 m. N.N.W. of Piotrkow city, on the Lodka (or Ludka). It has grown more rapidly than any city in Europe, and is now the fifth largest town in the Russian empire. Its numerous industrial establishments employ over 30,000 workmen, and produce £6,000,000 worth of annual output. The chief industry is cotton; after this come silk, wool, linen, cloth, boots, flour, beer, spirits, iron. There are also extensive dye works, flour mills, distilleries, and agricultural implement manufacturers. There are good technical and other schools. The population is mainly composed of Poles, Germans, and Jews. Pop. 400,000.

Loessa, a fine porous siliceous and calcareous earth, usually yellow, uniform in composition and structure, and unstratified. The lime may form concretions (*Lösemännchen*). It is probably a wind-borne accumulation of dried mud or fine desert sand retained where

deposited in the dry season round grass and other steppe plants. It is usually tubular, the plant stems having decomposed, and often forms vertical cliffs, which in China are 500 ft. high and burrowed with caves. It is found on the margin of deserts from which winds blow in the dry season—e.g. China—and here the eolian origin seems undoubted. It is also found beyond the terminal moraines of the great ice age in Europe and in N. and S. America. Round about salt lakes a variety is found without the vertical tubes. The deposit is probably very slow. Loczy found tombs two thousand years old buried under only seven or eight feet of loess. Yet the thickness may be great, rising from 1,500 to 2,000 ft. in China, and from 2,000 to 3,000 ft. in the Adobe regions of N. America. Where water can be supplied it gives an extremely fertile soil. The black earth (*chernozem*) of S. Russia and the black cotton soil (*regur*) of the Deccan have been explained as loess impregnated with humus, or the decomposition products of the underlying rocks.

Loewe, JOHANN CARL GOTTFRIED (1796-1869), German musical composer, born in Löbejün, near Halle, studied at Halle, and settled in Stettin (1821). A prolific composer, his works consist of operas, oratorios, symphonies, concertos, duets, and other pieces for the piano, and ballads. As a writer of the *art ballad* Loewe stands in the front rank. Among the best known of his ballads are his first two, *Edward* and *The Erl-King* (1818). See Bach's *The Art Ballad*, Loewe and Schubert (1890), and Lives, in German, by Runze (1903) and by Bulthaupt (1898).

Loft, CAPELL (1751-1824), English author, born in London. He was called to the bar in 1775; but the greater part of his life was

spent on his estates near Bury St. Edmunds. A zealous Whig, and an opponent of the American war and of the slave trade, he also took a leading part in local agitation for parliamentary reform. He was satirized by Byron in *English Bards and Scotch Reviewers*.

Lofoten, Lofoden, or LOFFODEN ISLANDS ('Lyn Foot'), large group of islands, Norway, between $67^{\circ} 30'$ and $69^{\circ} 30'$ N.; 12° and 17° E., separated from the mainland by the Westfjord. Between the islets Moskenesö and Mosken lies the once dreaded whirlpool Maelström. There is good pasturage for cattle, and little snow falls in winter. Fishing is the chief means of subsistence, and fish guano and oil are manufactured. Area, over 2,000 sq. m. Pop. 43,000, doubled in the fishing season.

Loftus, par. and tn., Yorkshire, England, 9 m. E.N.E. of Guisborough, near the sea. The town has several churches, a town hall, library, and reading room. Pop. (1911) 8,872.

Lofty, MOUNT, highest point (2,334 ft.) of Mt. Lofty Range, S. Australia, 10 m. s.e. of Adelaide.

Log. (1.) An apparatus used to measure a ship's speed. In its simplest form, as invented about 1620, it consists of the log-ship, the log-line, the log-reel, and the sand-glass. The log-ship is a flat wooden board, triangular in shape, and weighted so as to float perpendicularly, with holes at two corners, to one of which the log-line is made fast by passing through and knotting, and in the other of which is a bone peg attached by means of a span to the log-line. For ascertaining the speed of a ship, the log-ship at the end of the line is thrown overboard astern, and the line is paid out from the log-reel. The line is marked at certain intervals, and a sand-glass is turned

over so as to begin running exactly when the line does. The log-line is marked off in lengths of 47 ft. 3 in. when a 28-seconds sand-glass is used, which is usual. The lengths between the marks are determined from the fact that 47 ft. 3 in. bear the same proportion to a nautical mile as 28 seconds do to 1 hour. The first 10 fathoms or so of the line are 'stray line,' the allowance made for carrying the log, when it is heaved, away from the influence of the ship's wake.

A log was patented by Edward Massey of Hanley, Staffordshire, in 1834, for registering the speed of ships by a mechanism which was towed from the quarter, showing the distance actually gone through the water, by means of the revolutions of a fly-wheel, and registering upon a dial plate the knots and tenths. The 'Cherub' log, largely used in the navy, is of this type. See KNOT.

(2.) Also LOG-BOOK, the official journal of all important occurrences in and in connection with a ship. In ships of war a log-book is usually kept upon printed forms, which are bound up together, containing ruled columns in which are entered the date, the nature and force of the wind, the state of the weather, the course, the currents encountered, the progress made, the performances of the engines, the state of the thermometer and barometer, the observed latitude and longitude, bearings and distances, and other particulars, together with remarks as to work done on board, places visited, punishments inflicted, drills carried out, health of the ship, and signals made and exchanged. The official ship's log is kept by the navigating officer in charge, and is initialled by the officer on watch. In addition to the ship's log-book, an engine-room register

has to be kept by the engineer officer, and a gunnery log by the gunnery officer.

Logan, city, Utah, U.S.A., the co. seat of Cache co., on Logan R., 66 m. N. of Salt Lake City, in a rich mining and agricultural region. The state agricultural college and a government experiment station are situated here. Pop. (1910) 7,522.

Logan, MOUNT, peak (19,514 ft.) in the s.w. corner of the Yukon territory, Canada. It is probably the second highest peak in N. America.

Logan, JOHN (1748-88), Scottish divine and poet, born in Fala parish, Midlothian; studied at Edinburgh University, and became collegiate minister of S. Leith (1773). Constrained by dissipation to resign his pastoral charge (1786), he retired on a small annuity, and, settling in London, contributed to the *English Review*, and did miscellaneous literary work. He published a *View of Ancient History* (1788-93), a *Review of the Principal Charges against Warren Hastings* (1788), and two volumes of his *Sermons* (1790-1). The *Visit to the Country in Autumn* and the fine ballad *Braes of Yarrow* have undeniable claims to recognition for their poetical merit. See *Memoir* prefixed to his *Sermons* (1810), Anderson's *British Poets* (1793), and MacLagan's *Scottish Paraphrases* (1889). The Bruce-Logan controversy has produced a large amount of literature on the subject of the authorship of the *Ode to the Cuckoo*. See *British and Foreign Evangelical Review*, 1877 and 1879.

Logan, JOHN ALEXANDER (1826-86), American politician and soldier, born in Jackson co., Illinois; served in the Mexican war, and after its close studied at Louisville, and was admitted to the bar. A member of Congress (1855-61), he joined the army of

the North, and commanded with especial distinction till the end of the war. Re-entering Congress (1866), he became a senator (1871), being re-elected (1879 and 1885). In 1884 he was nominated as Republican candidate for the vice-presidency, but was defeated. Logan was author of *The Great Conspiracy* (1886) and *The Volunteer Soldier of America* (1888). See *Life* by Dawson (1887).

Logan, SIR WILLIAM EDMUND (1798-1875), Canadian geologist, born at Montreal; educated at Edinburgh High School, and, after being engaged in copper-smelting works at Swansea (where he prepared maps of the Welsh coal basins), was placed at the head of the projected geological survey of Canada (1842), a post which he held till 1871. He published his *Geology of Canada* (1863). See *Life* by Harrington (1883).

Logania, a genus of Australasian and New Zealand shrubs, order Loganiaceæ, characterized by opposite, entire leaves, and by white or pale bell-shaped flowers, usually borne in cymes.

Logansport, city, Indiana, U.S.A., the co. seat of Cass co., on the Wabash R., 110 m. S.E. of Chicago. It has large railway repairing shops and various manufactures. Pop. (1910) 19,650.

Logarithms are numbers related to the natural numbers in such a way as to enable us to substitute addition for multiplication and subtraction for division. Their invention (by Napier of Merchiston, 1614) constituted one of the most fruitful advances ever made in practical mathematics. The principle of the method is contained in the algebraic law of indices, which asserts that $a^x \times a^y = a^{x+y}$. If we put $a^x = m$ and $a^y = n$, the quantities x and y are the logarithms of the numbers m and n respectively to base a . If we represent m by its logarithm x ,

and n by its logarithm y , then the product mn will be represented by the sum $x + y$, and the ratio m/n by the difference $x - y$. Any number may be taken as base, but practically by far the most convenient base is 10. To this base the logarithm of 10 is 1; of 100, 2; of 1,000, 3; and so on, as indicated in the following table:-

Number.	Logarithm.
1	0
10	1
100	2
1,000	3
10,000	4
100,000	5
1,000,000	6
10,000,000	7
100,000,000	8

Evidently all numbers between 1 and 10 will have logarithms between 0 and 1, numbers between 10 and 100 will have logarithms between 1 and 2, and so on for all sets of numbers intermediate to successive powers of 10. For example, the logarithm of 2 is (to five figures) 0.30103. Since 20 is 10 times 2, the log. of 20 will be the sum of the logs. of 2 and 10—i.e. 1.30103. Similarly, log. 200 = 2.30103, log. 2000 = 3.30103, and so on. It is this property of the logarithms to base 10 which gives the system such a great advantage over systems to other bases. The fractional part of the logarithm is the same for the same succession of figures, quite independent of the position of the decimal point. The decimal point determines between which two powers of 10 the number lies, and the number which precedes the fractional part of the logarithm is known at once by mere inspection. This number is known as the characteristic, and the fractional part as the mantissa of the logarithm. For practical use it is convenient to tabulate the logarithms of all successive numbers to, say, five significant figures.

To facilitate trigonometrical calculations, it is usual to tabulate the logarithms of the circular functions of angles.

Logarithms to base 10 are usually called common logarithms, or Briggsian logarithms, after Briggs, who continued Napier's work by constructing the first table of logarithms to base 10. But once logarithms have been calculated to any one base, they can be obtained to any other base by multiplying by the appropriate factor throughout. For if $n = a^y = 10^x$, we find at once $x \log. 10 = y \log. a$; and hence y is found from x by dividing by the logarithm of a to base 10. Now it may be shown

$$\text{that } a = N (1 + y + \frac{1}{2}y^2 + \frac{1}{2 \cdot 3}y^3 + \frac{1}{2 \cdot 3 \cdot 4}y^4 + \text{etc.}); \text{ and if we choose}$$

a such that $N = 1$, we find for its value the converging series—

$$e = 1 + 1 + \frac{1}{2} + \frac{1}{2 \cdot 3} + \frac{1}{2 \cdot 3 \cdot 4} + \frac{1}{2 \cdot 3 \cdot 4 \cdot 5} + \dots = 2.7182818\dots \text{ It is this base which gives what are called the natural, hyperbolic, or Napierian logarithms.}$$

In all systems of logarithms the logarithm of unity is zero; hence the logarithms of proper fractions must be less than zero—i.e. they must be negative quantities. For example, the common logarithm of 0.2 is $\log. 2 - \log. 10 = 0.30103 - 1 = -0.69897$. It is usual, however, to keep the expression in the form first given—viz. -1.30103 , in which it is understood that the fractional part is positive. This is almost universally written in the more concise form $\bar{1}30103$, in which the negative sign is represented by a short stroke over the characteristic or number before the decimal point.

The logarithmic curve is a curve whose one co-ordinate is the logarithm of the other co-ordinate.

Its equation may be written in the form $y = \log. (x/a)$. The *logarithmic spiral* is represented by a similar equation between θ and r —viz. $\theta/a = \log. (r/a)$. The logarithmic spiral is also known as the equiangular spiral, because of the property that all *radii vectores* drawn from the pole cut the curve at the same angle for any one given curve.

Logau, FRIEDRICH, FREIHERR VON (1604–55), German poet, studied law at Frankfurt-on-the-Oder, and entered the service of the Duke of Liegnitz. A note of bitterness pervaded his epigrammatic and satirical verse. A selection made by Ramler and Lessing from Logau's *Sinngedichte* appeared in 1759; while a later selection from his poems, with biographical notice (1870), was followed by a complete edition, edited by Eitner (1872).

Loggia, the Italian name for galleries and verandas roofed over, but open on at least one side to the air.

Logia, a Greek word (pl.) meaning 'oracles,' and often applied by Biblical scholars to a supposed collection of the *agapha*, or 'sayings,' of Jesus. Papias, who lived in the first half of the 2nd century A.D., asserts that Matthew wrote a book of *logia* in Hebrew (i.e. Aramaic); but it is generally agreed that this cannot have been the canonical Matthew, which is an original, not a translated, work. The statement of Papias, however, has been of the highest service in pointing to a possible solution of the synoptic problem (see GOSPELS), as it indicates the existence of a collection of our Lord's utterances, which forms one of the sources of the 'two-document theory,' the other being the narrative of Mark, and which, existing in various forms, has been incorporated in our Matthew and

Luke. That such books of *logia* were actually compiled is demonstrated by the discovery, at Oxyrhynchus in Egypt, of two collections of such sayings, each beginning with the words 'Jesus said,' published by Grenfell and Hunt (1897 and 1904).

Logic as the systematic study of reasoning or thought was created by Aristotle. His logical system is embodied in a number of writings collectively known as the Organon, for a discussion of which see under ARISTOTLE.

The history of the Aristotelian logic has been largely a history of degeneration, and for this degeneration the mediaeval scholastic logicians were chiefly responsible. To Aristotle the syllogism was the instrument or method of science; to the scholastic theologians it was a method of expounding the dogmas of the church, and of expanding these into all their remoter consequences and details.

In view of this degradation of the syllogistic logic to a mere formal method of disputation, it is not surprising that thinkers of the modern period, like Bacon and Locke, imbued with the new scientific spirit, should have conceived a strong distaste for such a logic, at any rate as a method of science. This antagonism of the empirical school was not lessened when, later in the modern period, a purely formal conception of logic was expressly put forward and defended on the basis of a rigid distinction between the form and the matter of thought by logicians under the influence of Kant. Such a type of logic was represented in this country by Hamilton and Mansel. J. S. Mill, on the other hand, the contemporary representative of the empirical school, upheld their traditional view by attacking the syllogism as a *petitio principii*, and developing his own analysis

of the inductive methods of scientific proof as a real logic of investigation—a logic of truth as opposed to a mere logic of consistency. And accordingly, in several of our most popular and widely used text-books, written under the influence of Mill's great work, we find a sharp division made between deductive and inductive logic.

But from this condition of things modern logic has tended, and more especially within recent years, to diverge in two opposite directions. The purely formal logic of the formal logicians has given rise to a still more extreme symbolic logic, which attempts to express the processes of thinking by mathematical methods and formulae. (See Venn's *Symbolic Logic*, 2nd ed. 1894.) And, on the other hand, philosophical logicians have, in a manner, returned to the genuine Aristotelian standpoint, and, treating logic as the theory of knowledge or science, have re-vindicated for deduction its true place in logical theory. (See INDUCTION.) This more philosophical type of logic was revived in this country by Bradley's *Principles of Logic* (1883), a keen criticism of current logical theories, which was followed up by the masterly constructive work of Bosanquet (*Logic*, 2 vols. 1888). The translated logics of Lotze and Sigwart have contributed powerfully to the same general tendency to treat logic as a theory of knowledge and scientific method. From such a standpoint logic and epistemology become identical, and no hard and fast line can be drawn between logic and metaphysics. (See PHILOSOPHY.) The revival of philosophical logic in England was due to the influence of German post-Kantian idealism, and partakes of the metaphysical character of the latter; but quite apart from

this influence, other important contributions have been made, which are in line with Mill in bringing logic into close relation with science. Of these, Venn's *Empirical Logic* (2nd ed. 1907) may be said to be a very valuable revision of Mill, while Jevons's *Principles of Science* (2nd ed. 1877) combines the scientific standpoint with symbolic methods. The best recent work on the lines of the older formal logic is Keynes's *Formal Logic* (4th ed. 1906).

Logogram. a form of puzzle in which, a word having been selected (as, for example, 'mate'), as many anagrams as possible are formed from it ('team,' 'meat,' 'tame'). These anagrams themselves are not mentioned; but in the verses which form the puzzle either their synonyms (e.g. 'yoke,' 'food,' 'domesticated') or a description of them is contained. The reader is required from this to guess the original word. See ANAGRAM; also Wheatley's *Anagrams* (1862).

Logos, a term applied in the prologue of John's Gospel to Jesus Christ (John 1:1, 'the Word'). It has affinities with the Hebrew 'Wisdom' (see PROV. 8, especially ver. 22-30; cf. *Wisdom of Solomon* 7:25 f.), and also with the *Mēmra* (i.e., word) which in the Jewish Targums ranks as the agent of God in creation. The decisive step of identifying the Logos not only with the Messiah, but with an actual person, Jesus Christ, was taken by St. John. See Liddon's *Bampton Lectures* (1866), Heinze's *Die Lehre vom Logos in der Gr. Phil.* (1872), Drummond's *Philo Judaeus* (1888), and Réville's *La Doctrine du Logos* (1881).

Logroño. (1.) Inland prov. of N. Spain, consisting of a mountainous district s. of river Ebro. Area, 1,945 sq. m. It produces vegetables and fruit, but is speci-

ally famous for its red wines. Iron, silver, lead, copper, and lignite are found. Pop. (1910) 188,480. (2.) (Anc. *Lucronitus*), walled tn. and cap. of above prov., on the Ebro, 30 m. s.s.e. of Vitoria; is the centre of the Rioja wine district. Pop. 19,000.

Logwood is obtained from the logwood tree (*Hematoxylon campechianum*), which is indigenous to Central America. The heart-wood is imported, and is cut into chips, heaped together, moistened, and exposed to the air, when a process of fermentation takes place, which darkens the wood and gives it a bottle-green lustre, due to the formation of a colouring matter, haematein, or more commonly called haematoxylin, which can be extracted by hot water. Logwood is largely used as a red dye, in the manufacture of inks, and as an astringent to control diarrhoea. See DYEING.

Loharu, cap. of native state, India, in the s.e. of the Punjab, 85 m. w.s.w. of Delhi. Area, 226 sq. m. Pop. 15,000.

Lohengrin, son of Parzifal, and one of the knights of the Holy Grail, whose adventures form the subject of a 13th-century poetical romance. The legend runs that he was conveyed in a car drawn by a swan to Mainz to rescue Elsa, daughter of the Duke of Brabant. After fighting her enemy, Telramund, he married Elsa. His wife, in spite of his dissuasion, endeavoured to ascertain his previous history. He gave the information, and at once the swan and car appeared, and he returned to the Grail. On this story Wagner founded his opera *Lohengrin* (1848).

Lo-hui, tn., China, in E. part of island of Hainan, 70 m. S. of Kiung-chu. Pop. 85,000.

Loigny, vil. in dep. Eure-et-Loir, France, 25 m. s.s.e. of Chartres, the site of the battle of Loigny-Poupry, Dec. 2, 1870.

Loire. (1.) The longest river in France, rises in Mt. Gerbier-de-Jonc, Cévennes, in dep. Ardèche, and flows N. and N.W., s.w., and finally W., reaching the Bay of Biscay between St. Nazaire and Paimboeuf, after a course of 620 m. It receives on the r. bk. the Arroux and the Maine, on the l. bk. the Allier, Cher, Indre, Vienne, Thouet, and Sèvre Nantaise. It is subject to frequent floods, and dikes have been constructed in some parts to prevent destructive inundations. The Maritime Canal of the Loire was opened in 1892, between Paimboeuf and Martinière, to enable vessels to reach Nantes (31 m.) without navigating the shallow estuary. The Canal Latéral à la Loire accompanies the river all the way from Roanne to Briare, from which it proceeds to the Seine. The Loire is also connected by canal with the Saône. (2.) Department of central France, formed from parts of the ancient Lyonnais and Forez, is bounded on the N.W. and N. by Allier and Saône-et-Loire, and on the S. by Haute-Loire and Ardèche. It is 1,852 sq. m. in area, and is largely mountainous. The department is drained centrally and towards the N. by the Loire and its tributaries, and in the s.e. by the tributaries of the Rhone. The coal field is one of the richest in France, and iron and lead are mined in large quantities. Hardware, cutlery, machinery, ribbons, and muslins are manufactured, and the silk industry is important. Pop. 644,000. Cap. St. Etienne.

Loire, HAUTE-. See HAUTE-LOIRE.

Loire - Inférieure, maritime dep. of W. France, formed from part of ancient Brittany, and lying between the Bay of Biscay in the w. and the dep. of Maine-et-Loire in the e. The depart-

ment is 2,693 sq. m. in area, and is drained from E. to W. by the Loire and its tributaries, the Sèvre-Nantaise and the Erdre; the N. portion drains to the Vilaine. The surface is generally flat. Salt is largely manufactured from the coastal marshes. South of the Loire, in the Pays du Retz, lies the Lake of Grand Lieu. Cereals, vines, flax, and fruit are cultivated. The chief industries are the manufacture of hemp and linen, and of machinery, especially at Nantes and St. Nazaire. In the latter there is also shipbuilding. Auriferous rock has been recently discovered. Pop. 667,000. Cap. Nantes.

Loiret, dep. of central France, formed from ancient Orléanais and Berry, and lying N.E. of Loir-et-Cher and W. of Yonne. Area, 2,629 sq. m. The S. portion is drained by the Loire and its tributaries, the N. by the Loing and Essonne, towards the Seine. The plateau of Orleans, occupying the W. and N.W. part of the department, comprises a large tract of land of great fertility. Distilling and sugar-refining are carried on, and hosiery and porcelain are manufactured. Pop. 365,000. Cap. Orleans.

Loir-et-Cher, dep. of central France, formerly part of Orléanais and Touraine, lying between Eure-et-Loir on the N. and Indre on the S. Area, 2,478 sq. m., consisting mostly of plain. The N. is drained by the Loir, the centre by the Loire, and the S. by the Cher. Forests cover one-sixth of the surface. Cereals and fruit are cultivated; other industries are sheep and poultry rearing, bee-keeping; woollens, cottons, leather and glass manufactures. Pop. 276,000. Cap. Blois.

Loisy, ALFRED (1857), French Roman Catholic theologian, was born at Ambrières (dep. Marne); was professor at the Catholic Institute (1881-93) in Paris and

lecturer at the Sorbonne in the same city (1900-4). He has written *Histoire du Canon de l'Ancien Testament* (1890) and *Du Nouveau Testament* (1891); *Histoire Critique du Texte de l'Ancien Testament* (1892-3); *Etudes Bibliques* (ed. 1903); *La Religion d'Israël* (1901); *L'Evangile et l'Eglise* (ed. 1904); *Les Evangiles Synoptiques* (1908), etc. In 1903-4 several of his works were condemned by the papal see, and in 1908 he was excommunicated.

Loiza, tn., Porto Rico, near N. coast, 20 m. E. by S. of San Juan. Pop. 13,000.

Loja. (1.) City, prov. Granada, Spain, 30 m. W. of Granada, romantically situated in a valley on the river Genil; manufactures cloth and paper, and has some trade in grain and cattle. Pop. 20,000. (2.) LOJA, or LOXA, cap. of prov. of same name, Ecuador, beautifully situated, at an altitude of 6,900 ft., near the S. frontier. Pop. 10,000. The province has an area of 7,000 sq. m. and a pop. of about 67,000, and is famous for its cinchona bark.

Lokeren, tn., prov. E. Flanders, Belgium, 12 m. E.N.E. of Ghent; manufactures cottons, lace, and tobacco. Pop. 22,000.

Loki, one of the principal beings in Scandinavian mythology, possessing great physical beauty, combined with exceptional ability and cunning, which frequently perplexed the other deities. He may be regarded as the Scandinavian 'spirit of evil,' or Norse Mephistopheles. See BALDER.

Lokman, the name of two persons in Arabic tradition. The first was said to have made the Ma'rib dike, and in reward for his virtues to have been dowered with the lives of seven vultures, these birds being said each to live eighty years. The other is variously described as an Abyssinian slave of David's time, or a rela-

tive of Job, or is identified with Balham, the names possessing the same root meaning, 'swallower' or 'devourer.' To him were ascribed fables, proverbs, and poems. See Derenbourg's *Fables de Logman le Sage* (1850), and *The Thousand Nights and a Night*, edited by Lady Burton.

Lokoja, important station and military post, Northern Nigeria, on the Niger, near its junction with the Benue. Pop. 10,000.

Lolium, a genus of grasses, tribe Hordeæ, of which, perhaps, the most valuable member is the Italian rye grass (*L. italicum*), a variety of our native *L. perenne*. The darnel (*L. temulentum*) is said to be the 'tares' referred to in the gospels.

Lollards, THE, a religious body which, in the 13th or 14th century, opposed the doctrines and customs of the Church of Rome. The term Lollard was applied in the latter half of the 14th century to the followers of Wycliffe. The Lollards soon outdistanced Wycliffe; and John of Gaunt, Wycliffe's most zealous defender, showed no sympathy with their aspirations. When Henry of Lancaster deposed Richard (1399), he ascended the throne with the full concurrence of the church. Henceforth the Lancastrians assisted the church to suppress Lollardism. Henry IV. passed the statute *De Heretico Comburendo*, and William Sawtré was one of the first Lollard victims (1401). But Henry was unable to suppress the Lollard movement. It smouldered on, representing the general dissatisfaction with the papacy. In Tudor times Lollard opinions gradually triumphed, and in 1547, the first year of Edward VI.'s reign, all statutes against Lollardism were repealed. See *Apology for the Lollards* (1842); Trevelyan's *England in the Age of Wycliffe* (new ed. 1904), Powell and Trevelyan's

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The Peasants' Rising and the Lollards (1899); Poole's *Wycliffe and Movement for Reform* (1889); MacKinnon's, *History of Modern Liberty*, vol. i. (1906), and Gardner's *Lollardy and the Reformation in England* (1908).

Loloz, or **NESUS**, an aboriginal tribe in China, inhabiting the mountainous country Ta-liang-shan, lying between the Yang-tse-kiang and the Chien-chang valley. They are now nearly all subject to Chinese rule. In features, dress, and language they are quite distinct from the Chinese. See Hosie's *Three Years in W. China* (2nd ed. 1897) and Garnier's *Voyage en Indo-Chine* (1873).

Lomaria, a genus of ferns (order Polypodiaceæ), with dimorphous fronds, and linear sori occupying the space between the midrib and the edge of the frond. *L. spicant* is a British species (also known as *Blechnum boreale*, or 'hard fern'), of which there are numerous varieties, many worth cultivating. Among other species are the half-hardy *L. pumila*, from New Zealand; and the greenhouse *L. nigra* (New Zealand), *L. procera* (W. Indies), and *L. gibba* (New California).

Lomatia, a genus of sub-tropical shrubs and trees, order Proteaceæ, chiefly grown for the beauty of their leaves. *L. silaifolia* has leaves which are green above and glaucous below, and bears long racemes of white flowers; *L. tinctoria* has beautiful pinnate leaves; and *L. ferruginea* has leaves which are dark green above and downy below.

Lomatophyllum, a genus of succulent plants, order Liliaceæ. They bear fleshy leaves in a cluster at the summits of the stems. *L. aloiflorum*, the Bourbon aloe, with broad leaves and yellow and brown flowers, is sometimes cultivated in greenhouses.

Lombard, PETER (c. 1100-60), theologian, bishop of Paris, was born at Novara, Lombardy. Educated at Bologna, he went to France, where, through the influence of Bernard of Clairvaux, he obtained a professorship of theology at Paris, and was appointed to the bishopric in 1159. He became famous through his *Sententiæ Libri Quatuor*, a collection of extracts from the fathers. His *Works*, edited by Aleaume, were published (1546).

Lombards, or LONGOBARDI, a German people who, at the beginning of the Christian era, settled on the Lower Elbe, and in the 5th century seem to have migrated to the regions of the Danube. Throwing off the yoke of the Herulæ (490), under whose domination they had fallen, they destroyed the Gepidae (566), took possession of Pannonia, and under Alboin invaded Italy (568). There they easily established themselves in the northern half, with Pavia as their capital. Charlemagne reduced the Lombard kingdom to a province of his own empire (774), the Lombards thereafter becoming merged in the general Italian population. See *Les Lombardes en France* (1892).

LOMBARDS was also the name of those merchants from the commercial cities of N. Italy who acted as bankers, or rather money-lenders, to the kings of England from the time of Henry III. (1216-72) to the time of Edward III. (1327-77). They came first to England as the financial agents of the popes, who had many dues to collect. After the expulsion of the Jews from England (1290) the Edwards borrowed largely from the Lombards. Edward II. paid off his father's debts (£36,500) to the Frescobaldi, £1,800 to the Bellardi, and £4,600 to the Bardi. Edward III. borrowed so freely that these Lombard bankers began to look

to their securities; but in spite of their caution, the chief firms, the Bardi and the Peruzzi, became bankrupt—Edward III. owing the former 900,000 and the latter 600,000 crowns. During the following centuries we find English merchants taking their place alike as traders and as money-lenders. The Lombards had offices in the street which still bears their name. Their usurious transactions caused their expulsion from the kingdom by Queen Elizabeth. See Cunningham's *Growth of English Industry and Commerce* (1896).

Lombardy, div. of N. Italy, being the central part of the long depression between the Alps and the Apennines, drained by the Po and its tributaries, and having Piedmont on the w. and Venetia on the E. It comprises the provinces of Bergamo, Brescia, Como, Cremona, Mantua, Milan, Pavia, and Sondrio, with an area of 9,297 sq. m. The division is noted for its silk industry. Pop. 4,543,000. The chief city is Milan.

Lombok, one of the Lesser Sunda Ia., forming with Bali on the w. a residency of the Dutch E. Indies. Area, about 4,000 sq. m. It is volcanic in origin and mountainous in character, the highest peak being Sangkarejan (12,460 ft.). The valleys are fertile, and yield rice, maize, tobacco, coffee, indigo, and sugar-cane; cattle and horses are bred. Mataram is the capital; Ampenan on the w. coast is the seaport. Pop. estimated at over 500,000, chiefly Sasaks and Balinese.

Lombroso, CESARE (1836-1909), Italian criminologist, was born at Verona. He was appointed (1862) professor of mental diseases at Pavia University. He subsequently became director of a lunatic asylum at Pesaro, and finally became professor of forensic medicine and psychiatry at Turin.

His writings on insanity and criminology form a long list; but the two works which did more, perhaps, than any other to bring him fame were *L'Uomo delinquente* (1876-89), and *L'Uomo di genio* (1889; Eng. trans. 1891). The views and investigations of Lombroso, and his doctrine of a 'criminal type,' profoundly influenced the study of the whole subject of insanity and criminology.

Lomme, tn., France, in Nord dep., 3 m. w. by N. of Lille. Pop. 9,000.

Lomond, LOCH, between Dumfriesshire and Stirlingshire, Scotland, which from its size and picturesqueness is justly entitled the 'queen of Scottish lakes.' It covers an area of over 27 sq. m., is 21 m. long, and in breadth varies from 5 m. to 1 m., the southern portion being wide and island-studded. It drains to the Clyde by the Leven at the southern end.

Lom-Palanka, tn., Bulgaria, 80 m. n. of Sofia, at the junction of the Lom and the Danube. Pop. 9,000.

Lomza (Russian *Lomja*). (1.) Province of Russian Poland, W. Russia, bounded on the n. by Prussia and Suwalki government, on the e. by Grodno, on the s. by Siedlce and Warsaw, and on the w. by Plock. Area, 4,000 sq. m.; pop. 655,000 (mostly Roman Catholics). (2.) Town, cap. of above prov., 80 m. N.N.E. of Warsaw, on l. bk. of Narev. Pop. 26,000.

Lonato, tn., Italy, in Lombardy, 3 m. from s.w. end of Lago di Garda; here Napoleon defeated the Austrians in 1796. Pop. (comm.) 7,000.

London (Lat. *Londinium*, Fr. and Sp. *Londres*, Ital. *Londra*) (lat. $51^{\circ} 30' 48''$ N.; long. $5^{\circ} 48''$ W.), the largest city in the world, and the capital of England and of the British Empire, stands on

both banks of the river Thames, which is both tidal and navigable, and which at London Bridge (where it narrows) measures 325 yds. across. The Port of London extends from London Bridge to Queenborough on Sheppey I. (50 m.). London itself stretches its ever-growing tentacles into the four counties of Essex, Middlesex, Surrey, and Kent. Within its various boundaries London may be defined in the following ways:—
 (1.) The Metropolitan Police District, or 'GREATER LONDON,' which extends over a radius of 15 m. from Charing Cross, and has an area of upwards of 692 sq. m., an ascertained population (1911) of 7,252,963, and a rateable value (1908-9) of £54,415,508.
 (2.) Registration, or 'INNER LONDON,' coterminous with the administrative County of London. Inner London covers 117 sq. m., and contains an ascertained population (1911) of 4,522,961, and a rateable value of £44,873,509 (1909-10). (3.) The CITY OF LONDON within municipal and parliamentary limits: area, 672 ac.; a sleeping population (1911) of 19,657 (in 1861, 112,013); the day or working population rises to over 1,000,000. In addition to these three there is the Central Criminal Court district, with an area of 420 sq. m., and a population (1911) of over 6,591,900.

The CITY OF LONDON proper lies on the n. bank of the river, stretching between the Thames and Finsbury, and e. and w. from the Tower to Temple Bar. Both in size and shape it corresponds very nearly to the ancient Roman London, even as its chief thoroughfares, Cannon Street, Cheapside, Bishopsgate Street, etc., themselves run over the sites of Roman streets. Along the river front are strung out various steamer-piers, Queenhithe Dock, the steam-packet wharf by London Bridge, Billingsgate Fish

Market, the Custom-House, and the Tower.

Within the City precincts stand famous buildings and monuments too numerous to detail. Among them, however, may be mentioned the Guildhall (1411, rebuilt 1789) in King Street, off Cheapside; St. Paul's Cathedral; the Mansion House, the official residence of the Lord Mayor; the Bank of England; the General Post Office at St. Martin's-le-Grand; St. Bartholomew's Church in Smithfield, the finest example of Norman architecture in London, if not in Great Britain; and the Monument (202 ft. high) to commemorate the Great Fire. For the City markets see below —MARKETS.

The topography of the City is very simple. Its main arterial thoroughfares — Upper Thames Street, Cannon Street, Cheapside with the Poultry, and London Wall (which defines part of the course of the old wall round the City)—run in a parallel E. and W. direction, intersected by numerous cross streets forming roughly rectangular blocks. At either end of Cheapside-Poultry there is a nodus whence radiate several streets in many directions. The Poultry end is the most important, for thence branch off (past the Bank, the Royal Exchange, and the Mansion House) Princes Street, Threadneedle Street, Cornhill, Lombard Street, and King William Street—the focus of London's and the world's financial activity. Cheapside, the 'Golden Cheapside' of Herrick, still the main central artery of the City, no longer enjoys its old pre-eminence as a centre of commerce and finance. That has shifted eastwards, just as the shipping interest has settled itself chiefly in Leadenhall Street and Fenchurch Street. But, as of old, Lombard Street is still one of the main seats

of the banking industry; large mercers still have their shops in St. Paul's Churchyard; Paternoster Row continues to be the quarter of book publishers; and Fleet Street (the home of journalism) maintains its reputation for taverns, which have been its special feature for centuries. One of the most noted of the Fleet Street taverns is the Cheshire Cheese, once a favourite resort of Dr. Johnson, whose accustomed seat is still pointed out.

The COUNTY OF LONDON was established by the Local Government Act of 1888, and covers an area of 117 sq. m., with boundaries coterminous with the areas over which, prior to 1889, the Metropolitan Board of Works exercised jurisdiction. It should, however, be noted that the London Government Act of 1899 made some slight re-arrangements of the county boundaries, the principal being that Penge in the S. was taken out of, and South Hornsey in the N. was added to, London. On the following page is a list, with statistics, of the twenty-eight boroughs of which the County of London consists. Of these, ten lie to the south of the Thames in the geographical counties of Surrey and Kent—viz. (proceeding along the river from W. to E.) Wandsworth, Battersea, Lambeth, Southwark, Bermondsey, Deptford, Greenwich, Woolwich (part—North Woolwich—in Essex), and two inland boroughs, Camberwell and Lewisham. The two latter and the inland parts of the riverine boroughs are principally residential, and are inhabited by those who six days a week hurry northwards over the Thames. Lewisham still contains considerable stretches of open country or fields—in particular the high-lying, open, golfing common of Blackheath, near Greenwich Park, where golf was first played

in England, probably about the year 1608. Camberwell, densely built over, contains Dulwich College (founded by Edward Alleyn, 1619), and the magnificent but little frequented Dulwich Picture Gallery. See DULWICH.

Coming now to the boroughs bordering on the river, the following is the order from E. to W.:—

tion with it, and the Royal Observatory. At Greenwich, too, is a huge power station to supply electricity to all the S. London tramways operated by the County Council. Deptford is no longer the site of the royal dockyard (closed in 1869), where Drake received his knighthood, but possesses the Royal Victoria Naval

	Area in Acres.	Pop. (1911).	Valuation* (£).
Battersea.....	2,160	167,793	1,064,463
Bermondsey.....	1,500	125,960	942,719
Bethnal Green.....	759	128,282	549,859
Camberwell.....	4,480	261,357	1,380,079
Chelsea.....	660	66,404	934,617
Deptford.....	1,563	109,498	647,357
Finsbury.....	539	87,976	1,030,555
Fulham.....	1,704	153,825	912,008
Greenwich.....	3,852	95,977	677,918
Hackney.....	3,288	222,587	1,236,058
Hammersmith.....	2,286	121,603	882,381
Hampstead.....	2,265	85,510	1,113,965
Holborn.....	405	49,836	1,088,061
Islington.....	3,002	327,423	1,944,501
Kensington.....	2,291	172,402	2,434,701
Lambeth.....	4,080	298,126	1,960,797
Lewisham.....	7,014	160,843	1,000,402
Paddington.....	1,356	142,576	1,547,279
Poplar.....	2,328	162,449	833,454
St. Marylebone.....	1,473	118,221	2,014,318
St. Pancras.....	2,604	218,453	1,794,435
Shoreditch.....	658	111,463	809,811
Southwark.....	1,132	191,951	1,300,502
Stepney.....	1,766	280,024	1,490,943
Stoke Newington.....	863	50,683	354,223
Wandsworth.....	9,108	311,402	2,129,492
Westminster, City of.....	2,502	160,277	6,370,929
Woolwich	8,276	121,403	809,371
Total valuation of administrative county, £44,873,509;			
including City of London, £5,479,579.			

* Rateable value as altered by appeals to October, 1910.

Woolwich, which includes Eltham and Plumstead, is notable for the possession of the Royal Arsenal and the Royal Military Academy (for the training of R.E. and R.A. officers), the former employing some 12,000 men. Greenwich, with its engineering shops, telegraph works, and chemical works, contains Greenwich Hospital for sailors, naval schools in connec-

Victualling Yard, and also the London Corporation's foreign cattle-market. Deptford devotes itself to marine engineering. Bermondsey, with its extensive tanyards and wharves, is one of the lowest-lying districts of S. London, and the cellars of some streets adjoining the river are occasionally flooded by a high tide. Rotherhithe, at the N.E. end of Ber-

mondsey, contains the Surrey and Commercial Docks (350 acres), which import grain and timber, and which keep in touch with the heart of S. London by the Grand Surrey Canal. Southwark, or the Borough, is a borough of dingy, mean streets, with a river-front lined with great warehouses and busy wharves. It is thickly covered with factories. Guy's Hospital stands in the High Street of the Borough. Bankside, Southwark, was, in Shakespeare's day, the home of the amusement-mongers of London, for here were the bull-rings, the bear-pits, the notorious 'Holland's Leaguer,' and the Globe, Rose, Hope, and Swan Theatres. The Borough is the seat of the largest hop-market in the world. Next in order comes the borough of Lambeth, which faces Westminster, and reaches down from the river almost to the farthest southern confines of London County. It contains the district of Brixton. Lambeth Palace, which fronts the river, has been the chief official residence of the archbishops of Canterbury since 1197. To the N., opposite the Houses of Parliament, stands St. Thomas's Hospital (removed to that site in 1870). In Lambeth, too, stand Bedlam, or Bethlem Royal Hospital for the Insane (originally founded 1247 as a priory at Bishopsgate), and one of London's two great cricket grounds, Kennington Oval. The people of Battersea are fortunate in the possession of Battersea Park (185 acres), and in their easy access to Clapham Common on the south. (See BATTERSEA.) Last of all the South London boroughs is Wandsworth, the largest of the twenty-eight, which ends in the parish of Putney.

The principal bridges and tunnels connecting London s. of the river with that of the N. bank are Blackwall Tunnel, between Greenwich and Blackwall (cost

£1,329,462, used by 3,599,769 passengers and 933,116 vehicles in 1909); Rotherhithe Tunnel, between Rotherhithe and Shadwell, opened in June, 1908 (cost, £1,552,798, used by 2,389,552 passengers and 946,398 vehicles in 1909); Greenwich Tunnel, between Deptford and Millwall (cost £179,887, used by 4,661,800 passengers in 1909); the Thames Tunnel (finished 1843), between Rotherhithe and Wapping; the Tower Bridge, between Bermondsey and the Tower (opened 1894); the City and Southwark Subway; London Bridge, with a cable subway on either side of it; the South-Eastern Railway Bridge; Southwark Bridge; Blackfriars Bridge, with a South-Eastern Ry. bridge on one side, and the tunnel of the City and Waterloo electric tube on the other; Waterloo Bridge; Charing Cross Railway and Foot Bridge, with the Baker Street and Waterloo tube tunnel beside it; Westminster Bridge; Lambeth Bridge; Vauxhall Bridge; Victoria Bridge, from Battersea to Chelsea, with the L.B. & S.C.'s railway bridge beside it; Albert Bridge; Battersea Bridge; Battersea Railway Bridge of the W. London Extension Ry.; Wandsworth Bridge into Fulham; Putney Bridge, with a railway and foot bridge beside it; and Hammersmith Bridge.

South London possesses the following parks and commons:—Plumstead Common, Woolwich Common, Greenwich Park, Blackheath, Deptford Park, Southwark Park, Lambeth Palace Gardens (the private property of the archbishop, but thrown open to the public on certain occasions), Kennington Park, Vauxhall Park, Camberwell New Park, Battersea Park, Brockwell Park, Clapham Common, Wandsworth Common, and a number of other small parks and commons in the southern districts.

of the boroughs of Wandsworth, Lambeth, and Camberwell.

The London boroughs on the N. side of the Thames number eighteen. Five lie on the N.—viz. (going from w. to E.) *Hampstead*, *St. Pancras*, *Islington*, *Stoke Newington*, and *Hackney*; six abut on the river—*Hammersmith*, *Fulham*, *Chester*, *Westminster*, *Stepney*, and *Poplar*; and seven form the central band—*Kensington*, *Paddington*, *St. Marylebone*, *Holborn*, *Finsbury*, *Shoreditch*, and *Bethnal Green*.

The northern districts of London lie comparatively high on the w. (highest point 450 ft.), but gradually slope down to the low-lying Hackney marshes around the Lea R. on the E. Celebrated at one time for its medicinal waters, *Hampstead* continues a favourite residential district and also a resort of holiday makers, who on public holidays throng the famous Heath (240 ac.). Next to *Hampstead* lies *St. Pancras*, which stretches from the maze of dingy streets which surrounds the three great railway stations of *St. Pancras* (M.R.), *King's Cross* (G.N.R.), and *Euston* (L. & N.W.R.), through *Camden Town* and *Kentish Town* (an old prebendal manor, Kentish being a corruption of 'Cantler's,' or 'Cantelupe's') to the breezy slopes of *Highgate*. *Islington*, which includes Lower and Upper Holloway and Hornsey, contains a number of religious, philanthropic, and educational institutions, and also the Agricultural Hall (capable of holding 30,000 people), where cattle and horse shows, military tournaments, etc., are held. On the N.E. of *Islington* lies the small borough of *Stoke Newington*, next to which is *Hackney*, which, though densely covered with working-men's houses between *Hackney Downs* and *Hackney Canal*, can yet boast of large stretches of open field and

common land towards the river Lea. Immediately s. of *Hackney* lie two of the seven central boroughs—*Bethnal Green* and *Shoreditch*. The former is a wilderness of lower-class houses and factories, but contains the priceless boon of Victoria Park (217 ac.). *Shoreditch* principally consists of the densely-packed parishes of *Haggerston* and *Hoxton*, and reaches down to the northern borders of the City. Westward lie the parishes of *Finsbury*—*St. Luke's* and *Clerkenwell*. *Clerkenwell* (once the clerks' or priests' well of pure clear water which formed the chief supply of the district) is the headquarters of the watch and clock making industry, and is also occupied by a number of printing-houses. Here stands the Charterhouse, on the site of an old Carthusian monastery. In 1872 the school was transferred to Godalming in Surrey, but the building is still used as an educational institution by the Merchant Taylors' Co.

Holborn is intersected by the thoroughfare of the same name, across which once ran the little river called the *Holbourne* in its upper and the *Fleet* in its lower course. On either side of the thoroughfare lie some of the Inns of Court—*Gray's Inn* to the N., associated with the name of Francis Bacon, *Lincoln's Inn* and its Fields on the S.; and in *Holborn* itself stands the finest example of a 'half-timbered' house in London—*Staple Inn*. In the district of *Bloomsbury*, N. of *New Oxford Street* (which is a continuation of *Holborn*), lies the *British Museum*. The street names round the Museum—*Chenies Street*, *Great Russell Street*, *Bedford Place*, *Tavistock Square* (where Charles Dickens lived)—are reminiscent of the Bedford family, to which a great part of *Bloomsbury* still belongs.

Sharply divided from West-

minster on the s. by Oxford Street (named after Edward Harley, second Earl of Oxford), lies the large parish (anciently known as Tyburn) of St. Marylebone, and the still larger borough of the same name. The brook Tyburn ran through it, and the parish derives its name from the erection of a church dedicated to St. Mary le bourne—i.e. at the side of the brook. At the foot of the great Roman highway, which now, under the name of Edgware Road, bounds St. Marylebone on the w., stood Tyburn gallows. Marylebone was the residence of many celebrities, including Gibbon, Charles Wesley, Hoyle (an early authority on whist), and Hogarth. Madame Tussaud's great exhibition is in the Marylebone Road. The ancient manor of St. John's Wood in the w. takes its name from its original possessors, the Knights of St. John; in it lies the famous Lord's cricket ground. Marylebone also possesses Regent's Park (472 ac.), the largest of the London parks, containing the Zoological and Royal Botanic Gardens. Just north of the park is Primrose Hill, the only one of the little hills of N. London that is not covered with houses.

Crossing Edgware Road, we enter the borough of Paddington, which contains the ancient manor of Westbourne, so called after the little stream which once fed the Serpentine River in Hyde Park. South-west of Paddington is Kensington, at its southern end one of the finest and richest residential districts of London. Here are the public pleasure grounds of Kensington Gardens (200 ac.), which contain the old palace of Kensington, purchased by William III. from the Earl of Nottingham in 1689, and given to the nation in 1839. On the s. side of the gardens is the Albert Memorial (1872), and opposite is the Albert Hall (1867-71), an enor-

mous circular building used as a concert hall, and capable of seating some 10,000 persons. In the near vicinity are Olympia (an exhibition building), the S. Kensington and Royal Natural History Museums, and the Imperial Institute (opened 1893). To the east of the Imperial Institute is the Brompton district. Earl's Court is a district of West Kensington. Vying in historical importance with Kensington Palace is the quaint Elizabethan building of Holland House (1607), where dwelt at different times Fairfax, the parliamentary general; Addison, who died there; Penn of Pennsylvania; and Charles James Fox, through whose occupancy the house became a great Whig meeting-place up to the beginning of the 19th century.

The boundary borough of London county on the w. is that of Hammersmith, which touches the Harrow road on the N., and southward abuts on a bend of the river crossed by a fine suspension bridge. The Uxbridge road runs eastward through Hammersmith to Acton and Ealing. Next in order along the river-bank is the borough of Fulham. Here, on the river, stands Fulham Palace, the residence of the bishop of London, said to be the oldest inhabited house in England. A little farther down the river is the fashionable Hurlingham Park, the headquarters of pigeon-shooting and polo-playing in England. The next borough is that of Chelsea. Its eastern portion, known as Pimlico, at the beginning of the 18th century was a marshy waste where snipe were shot; while Chelsea parish itself was, in the middle of the 18th century, only an outlying village. Chelsea (*Chesil-ey*, 'the shingly island') has been fenced from the river by an embankment between the Victoria and Battersea Bridges, and on the embankment

stands Chelsea Hospital for disabled soldiers. Chelsea is still, as it has long been, a favourite residential quarter. Here, in the 16th century, lived Sir Thomas More, Princess Elizabeth, Anne of Cleves, and Queen Catherine Parr; later, Walpole, Steele, Swift (who lived opposite Dean Atterbury's house, and used to drive into London by 'the six-penny stage'), and Sir Hans Sloane, whose name is commemorated in Sloane Square and Sloane Street; and, later still, Leigh Hunt, Rossetti, George Eliot, and Carlyle.

The next and greatest of the London boroughs is the *City of Westminster*. It is the richest, architecturally the finest, and historically by far the most interesting, of any part of London outside the City. Beginning at Temple Bar (now marked by a griffin on a pedestal) in the Strand, which is the boundary between the two cities of London and Westminster, we plunge at once into the stateliest part of the metropolis. On one side are the Royal Courts of Justice, and, fronting the Strand, the newly-constructed crescent of Aldwych, whence the thoroughfare of Kingsway furnishes a new route to Holborn; and on the other, farther down the street, are buildings and names—Essex Street, Arundel Street, Somerset House, the Savoy Hotel, Villiers Street, and Northumberland Avenue—that remind us of the great houses of princes and nobles which stretched down towards the river-front, now fenced between Blackfriars and Westminster Bridges by the noble Victoria Embankment. At the west end of the Strand is Trafalgar Square, where the Corinthian column (145 ft.) to the memory of Nelson rears aloft, its pedestal guarded by Landseer's four lions; near it is a statue of General Gordon by Thornycroft.

From Trafalgar Square debouch S.W. Pall Mall, the home of many of London's greatest clubs, and (through Spring Gardens) the Mall, which separates Marlborough House (the residence of the Prince of Wales) and the Palace of St. James from the park of the same name. Facing the w. end of the Mall stands Buckingham Palace in its spacious grounds, while across Constitution Hill to the N. spreads the beautiful Green Park (60 ac.). South from Trafalgar Square run Whitehall and Parliament Street, past the Admiralty, the Horse Guards, and other government buildings, to end in the approaches to the Houses of Parliament and Westminster Abbey. North from Trafalgar Square we can pass up the Haymarket to the great nodus of west-end London, Piccadilly Circus. Thence radiate, north-east, the recent thoroughfare of Shaftesbury Avenue, and Long Acre (the home of the carriage and automobile trade); north, Regent Street, which, with Bond Street, New and Old, boasts London's richest shops; and west, Piccadilly. Narrow at first (though a scheme is in hand for widening it eighty feet between the Circus and Sackville Street), Piccadilly speedily becomes perhaps the finest street in London. It contains stately buildings such as Apsley, Devonshire, and Northampton Houses; for half its length it is bordered on the south by the Green Park, and ends at Hyde Park Corner, near a fine triumphal arch which is one of the entrances into Hyde Park (480 ac.), the most fashionable park in London.

Northwards and south-westwards from the w. end of Piccadilly spreads the huge parish of St. George's, Hanover Square, nearly all of which belongs to the Duke of Westminster, whose

family name, Grosvenor, is of frequent occurrence in the street names. Passing over the City of London, which has already been dealt with, and continuing along the river, we arrive (in startling contrast) at the grimy region of Stepney, which lies south of Bethnal Green. Eastward of the old City wall lie the Tower of London and the Royal Mint (1817) on Tower Hill. The principal traffic artery of this region is Commercial Road East (s. lies Ratcliffe Highway, now St. George Street, once notorious for robbery and murder); but the main activity of the district centres in the divisions bordering the river, and known as Wapping, Shadwell, and Limehouse. Here begin the docks, the first of the series, close to the Tower, being St. Katherine's Docks (24 ac.); next, the London Docks (120 ac.); and next, Shadwell and Limehouse Basins. (See LONDON PORT, page 494.) After Limehouse begins the borough of Poplar, of which the southern portion consists of the Isle of Dogs, and the northern of Bromley and Bow, which border the river Lea. The name 'Bow' commemorates an arched bridge over the Lea, at or near a point where it was crossed by the 'stratford,' the ford in the Roman 'street' known as the Vicinal Way. In the Isle of Dogs are the oldest of London's docks, opened in 1802, the West India Docks (285 ac.); below them is Millwall Dock; and in Blackwall, close to where the Lea joins the Thames, the East India Dock. There the County of London ends. But farther down, on the north bank of the Thames, are the Victoria (90 ac.) and Royal Albert Docks (72 ac.); and farther yet, 26 m. below London Bridge, Tilbury Docks (76 ac.).

To the east of Poplar (outside Greater London) is the borough of West Ham, and still farther east

(7½ m. E.E. Ry. from Fenchurch Street) the town of Barking.

The industries and manufactures of London are enormous and most varied. Some of the more special industries may be specified:—Brewing, distilling, sugar-refining. These three industries have no particular locality. Silk is manufactured in Spitalfields and Bethnal Green; tanning, soap-boiling, and candle-making are carried on in Bermondsey and Southwark; Lambeth, Millwall, and Deptford have engineering works; potteries are established at Lambeth; and Clerkenwell has an industry of watch-making and clock-making.

There are close on three hundred different authorities which control the various interests of London, and which spend on the work about £15,000,000 annually. But the supreme municipal authority is the London County Council. (See GOVERNMENT, page 482.) The council's expenditure for the year ending March 31, 1910, amounted to £14,700,000, the total county rate being 3s. 1½d. Up to the year 1909 the council has provided housing accommodation for 28,335 persons in working-class dwellings, and in addition to providing gymnasiums, bands, games, cheap steamboats on the Thames, etc., has since 1901 secured the following parks and open spaces for the people: Marble Hill, Twickenham (66 ac.); Eltham Park (41½ ac.); Avery Hill, Eltham (84 ac.); Hainault Forest (803 ac.); Springfield, Clapton (32½ ac.); Norwood Park, Lambeth (33 ac.); and Ruskin Park, Denmark Hill (36 ac.). Thanks to these measures, and to a careful supervision of drainage and street nuisances, it had brought down the death-rate of London to 13·8 per 1,000 in 1908.

The Education Committee of the County Council administers both elementary and secondary

education within its area. In 1909 there were 572,323 (average attendance, 513,916) scholars on the rolls of the council schools, and 158,176 (average attendance, 139,825) on the rolls of the non-provided schools. The elementary school population is 886,373. The expenditure on the maintenance of elementary schools for the financial year ending March 31, 1909, was £4,368,102.

HISTORY (by the late Sir Walter Besant).—The origin and foundation of London are, and will always continue to be, matters of dispute and controversy.

We must first consider the site of the city with respect to its local conditions, and next the site with reference to the country generally.

First, as to the local conditions. The river on which the city stands winds in a serpentine course from Hampton to its mouth through a vast swamp, bordered on the N. and on the s. by a low cliff, the course of which may still be traced by the rising ground which has taken the place of the cliff. Thus, Battersea Rise, Clapham Rise, Brixton Rise indicate the position of the cliff on the s. side; while the slopes in Thames Street, the Haymarket, and St. James's Street, for example, show where it stood on the N. side.

The swamp is the first point of importance to note. At Westminster the river bends round towards the N., again at Charing Cross towards the E.; it walls in the Isle of Dogs, a peninsula; and then continues its course eastward to its mouth. The city proper lies between the Fleet R. on the w. and the Tower of London on the E. On the s. side of the Thames stretched the marsh, four miles long from w. to E., and one mile or a mile and a half broad from N. to s. On the E. side of the city the marsh lay along the riverside for two

miles before it was crossed by the river Lea, which flowed through a broad marsh of its own on either bank. On the w. side the Fleet also flowed through its own mud banks into the Thames, while the present Fleet Street and the Strand lay at the foot of the cliff, covered with water at high tide, and forming part of the great western swamp. On the N. of the river, beyond the cliff stretched a vast moor, intersected with small streams and dotted with ponds. The moor was quite useless for purposes of cultivation. Beyond the clearing afterwards called Iseldon or Islington began the immense forest of Middlesex and Essex, covering the whole ground between Harrow and the site of Hainault Forest, and stretching into Hertfordshire and the heights beyond.

The only farm-land available for the city was thus a breadth of pasture-land between Oxford Street and the Strand, the rest of the environment being forest or marsh. This is the second important point to remember. Whatever might be in store for the future of London, one thing is quite certain—the city, even in its infancy, could never be maintained by any lands outside the walls, or by any adjoining land kept open for the purpose of cultivation. From the outset, when it was little more than a village, London was dependent for its supplies on the settlements and cultivated lands beyond what we now call the suburbs.

Three streams, not to speak of many small brooks, flowed into the Thames on the N. The first, starting from the w., was called the Fleet or the Holbourne. It rose in the northern heights, received the waters of many springs, drained a large expanse of country, and was navigable for a very short distance above its mouth. Through the middle of the site on which

afterwards the city was built flowed the smaller stream, called the Walbrook. This rose in the northern moor as a tiny rivulet, was joined by other rivulets, and when it gained the Thames was a stream of some importance running through a valley about 130 feet broad, at the point where is now the Poultry, and becoming broader at the mouth. The Walbrook served for many centuries to divide the city into two—E. and W. London. Outside the walls, nearly three miles to the E., the swift and then important river Lee ran into the Thames, through a succession of marsh-lands which remain to this day. Although drained, they are below the level of high tide, and serve at least to make us understand the marshes of the Thames. Between the Fleet and the Walbrook, and again on the E. of the Walbrook, the northern cliff advanced to the edge of the river, which it overhung. It was a bank of stiff clay from twenty to thirty feet high, the foot of which, being continually washed by the river at every high tide, was gradually worn away.

The advance of the cliff at these points is the third point of cardinal importance concerned with the site of London. These, then, are the local conditions of the place: a tidal river almost 1,000 feet wide; marshes on either bank; a wild moorland on the N. useless for agriculture; an impenetrable forest on the N., and another on the S.; a comparatively small area in the w. available for pasture; protection against an enemy by river, marsh, and forest; dependence on supplies, save of fish, birds, and game, from the outside. Add to these an excellent natural port for small ships sailing up the river, at Dowgate, at the mouth of the Walbrook.

The next point to consider is the site with reference to the country.

When the Romans arrived, they found in the s. part of our island a civilization at least equal to that of Gaul, and, in fact, introduced from Gaul. How long the country had been opened up for trade, what was the extent of the trade, and when the immigration from Gaul began, it is impossible to determine. For reasons too long to be considered in this place, I am of opinion that many generations, perhaps many centuries, passed between the arrival of the Gauls and that of the Romans. The foreign trade, such as it was, was carried on through the southern ports, and especially through Dover and Southampton. The main artery of trade, the chief road—little more than a track even in summer—ran through the middle of the island from N. to S., passing over the Thames at its first ford. This ford crossed a marsh, and an island or eyot in the marsh, before it reached the river. After the river the track crossed the marsh on the s. side by a causeway to the higher ground, and then struck S.E. in order to reach Dover, Richborough, and Sandwich, or s.w. to reach Southampton. The island was that afterwards called Thorney, a small oblong tract of land rising just above high-water mark, and situated at the mouth of a little stream which brought down in its course branches, trunks, and leaves, which were caught at the outflow, and so formed the island. Long, therefore, before London was founded, the trade of the country passed over Thorney.

The foundation of London has no connection at all with the arrival of the Romans. It is described by Aulus Plautius in the 1st century, and only a few years after the conquest, as a great commercial resort; it took the place of Thorney gradually, but long before the Romans came.

The natural advantages of London over Thorney were the ports of the Walbrook and the Fleet, the existence of the high northern cliff running down to the river above the malarious and ague-stricken marsh, and the easy defence of the place by reason of its natural position. The site was also well watered, and capable of being converted, by quays built on piles, into a place of commerce far more extensive and more convenient than the small, low-lying, defenceless islet of Thorney.

In this way London was founded and gradually grew. Its name signified probably the 'ship-fort,' and is of Celtic, not of Roman or Saxon, origin. The old line of traffic which ran down the Edgware Road, and so across the Park to the river, was diverted at the spot which is now the Marble Arch, and ran along the present Oxford Street and Holborn, crossing the Fleet R. by a ford and afterwards by a bridge, and so into the city. After the building of the city wall the traffic entered by a gate near but not on the site of Newgate. We must remember that at first there was no wall to protect London; there was no need of a wall. The quays and ports built by the early merchants were deserted in the winter; in the summer, and for two or three months only, there was a considerable course of those who bought and sold; the trade of London was carried on at an annual fair, so to speak, held every summer; there were no buildings; there was no town, as we understand a town; there was no attempt at walls, fortifications, or defence, because there was nothing to defend except at the time of the annual fair, when the traders themselves were perfectly able, without the help of walls, to defend their own wares against any

attack that might be made upon them. No bridge then spanned the river; the only permanent residents were the fisher-folk, those who trapped the wild birds of the marsh and the game of the forest, and the slaves of the port.

That such was the condition of London when the Romans arrived seems tolerably certain. They selected the high spot on the E. side of the Walbrook for the site of a citadel and place of arms, and erected on this spot a fort, solid, strong, and impregnable, with access to the N. and the W. by gates, and to the S. by a bridge over the river. Foundations of the citadel have been discovered at various points. It reached from the Walbrook to Mincing Lane, and from Cornhill to Thames Street. The first bridge was probably built at the same time as the fortress, for which it afforded communication to the S., and was at the same time a means of offence and defence.

Roman London, then, consisted of the citadel first, with the bridge. There was no wall; and the trade of the place, which seemed to Tacitus so considerable, was in reality very small compared with its subsequent development. There was certainly a port beside the Bridge Gate—an artificial port cut out of the soft mud and shingle of the foreshore, supported and kept open by piles on which quays were constructed communicating with the Bridge Gate. This port was afterwards called Billingsgate or Lundentuneshythe. There was another and an earlier port formed by the mouth of the Walbrook; there was a third, also artificial, though the date of its construction cannot be ascertained, on the site now called Queenhithe. It is also probable that Puddle Dock is a site of a fourth port; while, across the river, St. Saviour's Dock probably dates from Roman

times. Here also was an ancient ferry across the river, much more frequented than the bridge, being easier of access and quicker. In these ports, and on quays constructed beside them to right and left, was carried on the export and import trade of the city.

The history of the city during the Roman occupation contains few events. In 61 A.D. the place was taken, and the defenceless people were massacred. Two hundred years later it was held by the usurpers Carausius and Allectus, the latter of whom was defeated and slain by the Roman general Asclepiodotus in a battle fought close to London. When, in the 4th century, Roman roads made it possible for an invading army from the N. to march upon London, the wall was constructed. Its length proves the extent of the population of the city, because it was never the custom of the Romans to build more than they could defend. The area enclosed by the wall was 380 acres; the length of the wall, including the riverside part, was two miles and three-quarters. There is evidence that it was hastily built. There was no time to procure stone enough for the purpose from the quarries of Kent; the remaining portions and foundations have disclosed the fact that wherever stones existed in the city they were seized and built into the wall. Thus altars, millstones, funeral monuments, statues, columns on walls of villas, the walls of the citadel, the walls of every public building, including the forum, the imperial offices, the theatre, and the amphitheatre, were used in the construction of this huge wall, erected in the fear of invasion from the north. This was towards the end of the 4th century.

The retirement of the Romans and the coming of the Saxons followed. Nothing is then known

of the city until the year 457 A.D., when we hear of the fugitives from the victorious Saxon invaders flying for safety across the bridge of London.

Early in the 7th century we hear of London again; it then belonged to the E. Saxons, and there was founded a Christian church under Mellitus as first bishop. Trade slowly revived, merchants began to return, and London in the 7th and 8th centuries became once more a great commercial centre.

Then the Danish invasions took place, and London, taken by the invaders and apparently pillaged, again lay desolate and deserted until it was recovered by Alfred. He repaired the defences, and made of London the strongest and, before long, the richest city in the island. The condition of the wall is shown by the fact that Alfred did not take the trouble to repair the old gates, but constructed new gates at Aldersgate, Newgate, Bishopsgate, and probably posterns at Ludgate and Cripplegate. So strong did he make London that the power of the Danes and Normans in repeated reigns could not take the city. So great was the trade in consequence of the confidence inspired by this strength that merchants flocked to London from Rouen, Caen, Germany, and the Low Countries.

The history of London itself is difficult to separate from the history of the country. Successive charters secured the liberties of the citizen. The sovereign might and did tax and assess the people heavily; but when from time to time the citizens presented a passive resistance to taxation, no monarch had the power to coerce them. As London grew more powerful, the demands of the sovereign grew greater; and the people of London became more exacting over the extension of

their liberties, and more jealous of encroachment. This is the keynote for the historian. There existed among the people of London a traditional resolve—unwritten, but part and parcel of themselves—to maintain and to defend their liberties.

This side of the city history is best illustrated by a few notes on the growth of the municipality. On the resettlement of the city by Alfred, the whole of the area included within the wall was parcelled out into manors. Every manor was called after the name of its owner, who was its alderman, and exercised authority, holding courts, and being responsible for order on his own land. It is not certain how many wards or manors there were. There was no corporate government of the city. The king's officer was the port-reeve, whose functions were those of treasurer, guardian of customs and dues, and assessor of the same; he corresponded to the sheriff or shire-reeve of a county. The bishop exercised ecclesiastical jurisdiction, which then included a good deal of the temporal government. There was a folk-mote, or parliament of the people, called together on important occasions at Paul's Cross; and there was the ward-mote, whose powers and tenure of meeting seem to have depended at first mainly on the aldermen of the wards. The export and import trade of the port was regulated by the merchants, subject to the king's dues; the retail trade was subject to the rules of the market, and the ordinances of the guilds, which existed from a very early period. The merchant guild, found in all mediæval cities, was probably regulated, perhaps in a nameless and informal manner, at the port itself.

The defence of the city was entrusted to a military organization called the knighten guild,

whose duty it was to see that the citizens were duly armed for purposes of defence. This guild administered a tract of land outside Aldgate, called the Portsoken, and the Tower lands, whose revenues were devoted to the protection of the city. The guild consisted of the aldermen, notables, and some of the chief citizens. The time came when the defence of the city was practically taken over by the Normans, who had their fortresses in the east and the west; then, by permission of the king, the guild dissolved itself, surrendered its property, and gave it to the priory of the Holy Trinity at Aldgate, receiving in return for themselves, their ancestors, and their own kin, the 'fraternity' of the monastery.

As the guilds arrived at the possession of great power, they were regarded with jealousy by the Norman kings, especially by Henry II., who suppressed twenty of them as 'adulterine'—i.e. erected without royal licence. The chief cause of this jealousy was the establishment of the 'commune' in many of the continental cities, including Rouen, between which place and London there was an intimate connection. 'Never,' says the chronicler, 'would the king grant a commune to London.' Yet London, when the advantages of such a corporate body were understood, never ceased to plan the concession. This opportunity arose when Richard I. was in the Holy Land, when the government under Longchamp had become intolerable, and when the barons, headed by John, desired to enter and to take possession of the city, in order to depose Longchamp, which they could only effect by the permission of the citizens. They were admitted; on the same day John gave them the commune, and Longchamp was deposed. The first mayor was

Henry Fitz Aylwyn, or Henry of London, Stone, who was elected for life, and held the office for twenty-five years.

Within these limits it is not possible to trace the gradual growth of the municipality. The immediate effects of the first concessions were of the most revolutionary kind. A city council was formed, at which the whole city was represented by the mayor, while the aldermen in their wards lost a great deal of their authority. The merchant guild, under whichever form or name it had existed, ceased to exercise authority in matters of trade; the ordinances of the trade guilds were referred to the mayor; the port-reeve disappeared, and the power of the sheriffs, his successors, was greatly curtailed; the folk-mote, preserved in form, no longer had any power except for purposes of popular demonstration. The city, instead of a collection of manors lying side by side, became one incorporation under one government. Fortunately for the country—paradoxical as it sounds—it was never free from factions, which, while they weakened the city for a time, prevented its separation from the country or its domination over the country.

The mediæval population of London was as mixed as it is at present. The trade with the Baltic and with N. Europe was chiefly in the hands of the Hanseatic League, which enjoyed great and most valuable privileges. There was a large trade with Bruges, Ypres, and Ghent; many Flemings were settled in the country, and there were English houses of business in Bruges corresponding to the firms of the Hansa merchants in London. The 'Men of the Empire' were represented by a colony from Cologne; there was a constant intercommunication between Lon-

don and Normandy, especially Rouen; Bordeaux sent merchants to conduct the wine trade; the great galleys of Venice and of Genoa arrived every year in the port of London, and were received by Italian merchants; there was an extensive trade in English ships with the Levant; the Jewish money-lenders, after their expulsion, were succeeded by Lombards and 'Coursines,' licensed by the Pope to receive his taxes and to lend money under the form of gifts for which 'expenses' were charged instead of interest. The immigration of foreigners to London never ceased, and the early chronicles are full of names which denote their origin.

The influence of the church was also a very powerful factor in the government of the city. The bishop of London, even when he was personally unpopular, continued to stand for the city in ecclesiastical matters, and was regarded by the people as part of their own grandeur, and an illustration of their own wealth and strength. The dean and canons of St. Paul's owned a considerable portion of the city, and were patrons of many city churches. The monastic houses occupied large premises, and owned, in addition, whole streets; while there were now a hundred parish churches, each with its rector or vicar, its chantry priests, and its endowments of masses and various charities. The people employed in the service of the church—the architects, lawyers, notaries, scriveners, illuminators, bailiffs, gardeners, butlers, bakers, carpenters; makers of vestments, paternosters, crucifixes, candlesticks, altar-cloths, painted windows, and the like—numbered many thousands, perhaps a fifth part of the whole population.

The monastic houses formed a chain within and without the

city wall. Thus, without the wall, beginning at the E., were St. Katherine's by the Tower, St. Mary of Graces, the Sisters of St. Clare, Bethlehem, St. Mary Spital, Holywell, Charter House, St. Francis' Nunnery, the House of the Knights Hospitallers, St. Bartholomew's Priory and Hospital, White Friars, St. Mary of Roncesvalles, Westminster Abbey, and the Temple. Within the walls, following the same direction, were the Crutched Friars, the Holy Trinity, St. Augustine's, St. Helen's, Elsyng Spital, St. Francis' Hermitage, Gray Friars, Black Friars, and St. Martin's-le-Grand. On the s. side of the river were the foundations of St. Mary Overyes and St. Thomas, and Bermondsey. The ecclesiastical foundations hindered the growth of London in most directions. The vast manor of Stepney, which belonged to the bishop of London, and extended N. so as to include Hoxton and Houndsditch, was kept free from any but farm-buildings. The moor was only built upon without Bishopsgate and Aldersgate. The lands of Westminster extended eastward as far as the Fleet R. The manors of Gray's Inn, St. Pancras, St. Giles, Bloomsbury, Islington, and St. Luke, as well as Old Street, belonged to the canons of St. Paul's. Most of Clerkenwell and Highbury belonged to the Knights Hospitallers; Canonbury to the canons of St. Bartholomew; Paddington, Westbourne, Kilburn, and Hampstead to Westminster Abbey; part of St. Marylebone to Hackney Abbey, with other manors and country places.

The belt of ecclesiastical manors was largely the cause of the crowded condition of the city. We find, for instance, that there were in the 12th or 13th century four belts of population. First the 'service,' including the people

who lived by the riverside, in streets reclaimed as space was wanted from the foreshore on either side of the artificial ports. Then came the merchants' and the nobles' houses, lying between W. and E. Chepe and Thames Street. Then the great retail markets of West and East Chepe, with the Poultry, Newgate Street, Cornhill, Leadenhall Street, and Gracechurch Street. Lastly, occupying the N. part of the city, was the industrial quarter, in which everything was made. It is a rough division, not to be taken literally, but it will serve. The last part consisted of hamlets separated from one another by orchards and gardens, with narrow lanes leading to the markets, and one church to several hamlets.

The successive kings tried either to oppress or to conciliate the city. Its greatest enemy was Henry III. During his long reign trade decayed, and the city fell into a kind of anarchy, in which lawlessness and violence seemed to defy the authorities. Edward I. took the reins into his strong hands, and restored order after a ten years' suspension of the mayoralty; under the miserable rule of Edward II. lawlessness again broke out, to be repressed under his successor; and so on. It is noteworthy that in the history of the country London has been the chief instrument in the election and deposition of the king. The city upheld Edmund Ironside against Canute; accepted William I.; elected Henry I. in place of his elder brother; elected Stephen; joined the queen in the deposition of Edward II.; sent out its army for the arrest of Richard II.; elected Henry IV.; stood by his son, and supported his unfortunate grandson until the death of the Prince of Wales after Tewkesbury; welcomed Henry VII.; stood by Queen Mary; joined the parliamentary cause

against Charles I.; restored Charles II.; sent James II. on his travels. This is a most remarkable record of king-making and king-breaking, unequalled in the history of any other city.

We must not forget the trade of London. For many generations the chief export was wool. There was no export and import of food-stuffs, save on rare occasions; each village was sufficient to itself, or contributed to the wants of the neighbouring towns. The imports of the country consisted principally of luxuries, such as fine stuffs, silks, velvets, weapons, spices, wine, oil, and so forth; while the exports continued to be wool, skins, iron and tin, and in the earliest times slaves. The great outburst of discovery and travel which characterized the 16th century laid the foundation for the expansion of trade, and therefore of empire, in the 17th and 18th centuries. This outburst is marked in the history of the city not only by the increased wealth of the merchants, but also by the creation of the trading companies, of which so many were founded by Elizabeth and her immediate successors.

Fire, plague, and famine from time to time attacked the city. It was in 1666 that the Great Fire occurred which destroyed fifteen city wards, with 13,000 houses. The fire, it is commonly stated and believed, cleared away a great number of narrow courts and lanes. But their successors were nearly as narrow. Pestilence in some form or other was always present in the city. We hear of terrible visitations, such as that of the Black Death in the 14th century; but we forget that during the whole of the 16th and 17th centuries, down to the last visitation of 1665, the streets of London were never wholly free from plague. Perhaps the boon of a

plentiful supply of water, conferred for the first time by the New River Company in 1609, may have done much towards averting more attacks of the disease.

Other events of importance—their importance must not be measured by the brief mention here allotted to them—were the reformation, on the whole welcomed by the people; the dissolution of the religious houses; the Marian persecutions, which consolidated the reformation; the rebuilding of the city after the fire; the foundation of the Royal Exchange, and its subsequent rebuilding after the fire of 1666 and of 1841; the closing of the Exchequer by Charles II., which effectually alienated the merchant class from the Stuarts; the establishment of the Bank of England in 1694; the removal of the city gates in 1760; the piecemeal destruction of the city wall; the filling up of the town ditch; the rebuilding of London Bridge; the building of the many bridges which now span the river; the abolition of imprisonment for debt—an event of the highest importance in a trading city; the decrease of the population of the city proper until it now numbers only a few thousands; the occupation of the suburbs, which are now covered with houses; the enormous increase of the population reckoned over this newly-built area; the creating of the London County Council and the metropolitan boroughs.

GOVERNMENT.—For the purposes of the imperial and judicial side of local government the County of London and the City of London are almost entirely distinct, while for the purposes of the administrative side of local government they are to a considerable extent united, forming together the Administrative County of London. The pur-

poses for which local government exists on its imperial and judicial side are: (1) the preservation of the King's peace; (2) the administration of justice in local courts, both civil and criminal; (3) the enforcement of civil process; (4) the militia; (5) the representation of the people in Parliament; and (6) the police. The organization for these purposes in counties generally consists of the sheriff, the lord-lieutenant, the magistrates, the clerk of the peace, the coroners, the county court, and the standing joint committee of the County Council and the justices. All these authorities exist in London, but in some cases their jurisdiction is superseded by that of other authorities peculiar to London.

The Sheriff.—There are two sheriffs of the City of London, elected annually on Midsummer Day in the Court of Common Hall by those freemen of the city who are liverymen of the city companies. The sheriff of the County of London is appointed in the same way as in other counties. (See *SHERIFF*.) The sheriffs of the city attend the sittings of the Central Criminal Court, attend the Lord Mayor on official occasions, and share the expense of his entertainments, present the city's petitions to Parliament and addresses to the King. The sheriff of the County of London has scarcely any duties.

The Lord-Lieutenant.—The lord-lieutenant of the County of London has the same duties as in other counties. (See *LORD-LIEUTENANT*.) In the City of London the lieutenancy is in commission—i.e. there is no lord-lieutenant, but a large number of commissioners who together exercise the office.

The Magistrates.—(1.) In the County of London the magistrates are the justices named in the

Commission of the Peace for the county. They have all the civil jurisdiction of justices in other counties, both at special and quarter sessions; but their criminal jurisdiction is exercised by the metropolitan police magistrates and the paid chairman and deputy-chairman of the courts of quarter sessions. (2.) Justices of Middlesex, Surrey, Kent, the City of Westminster, and the Tower, at the time when London was made a county, are justices of the new County of London as long as they reside or occupy property within it. (3.) The chairman of the London County Council and the chairmen of the London Borough Councils are justices of the County of London during their term of office. (4.) The commissioner and assistant-commissioners of the metropolitan police. (5.) The metropolitan police magistrates. (See *METROPOLITAN POLICE COURTS*.) (6.) The chairman and deputy-chairmen of the court of quarter sessions of the County of London. By section 42 of the Local Government Act, 1888, the King has power, on the petition of the County Council, to appoint a barrister of not less than ten years' standing to be chairman, or a deputy-chairman, of the court of quarter sessions of the County of London, and any such chairman or deputy-chairman has power to hold the court alone. Courts of quarter sessions are held by these paid magistrates at Newington and Clerkenwell, and the result is that the criminal jurisdiction at quarter sessions of the ordinary justices of London is ousted.

In the City of London the magistrates are the Lord Mayor, aldermen, and the recorder, who are all justices by charter. There is a court of quarter sessions for the City of London, but most criminal cases arising in the city

are tried at the Old Bailey, where the recorder and the common serjeant of the city sit as judges of the Central Criminal Court. The Lord Mayor or an alderman, sitting at the Mansion House or Guildhall justice room, has the powers of two justices sitting as a court of petty sessions, and, in addition, nearly all the special powers of a metropolitan police magistrate.

The clerk of the peace is the clerk of the court of quarter sessions. He has the custody of all records and documents belonging to the court of quarter sessions and the justices out of session. In most counties he is also the clerk of the County Council, but he is not so in London.

The coroners in London have the same duties as elsewhere (see CORONER); but the coroner of the City of London also holds inquests in cases of fires in the city, under the City of London Fire Inquests Act, 1881.

The modern county courts have little connection with the county. They are imperial courts of inferior jurisdiction, situated all over the country for the sake of convenience and cheapness.

The Central Criminal Court is a court of the High Court of Justice, adapted to meet the needs of London and the surrounding district. See CENTRAL CRIMINAL COURT.

The metropolitan police and the city police are dealt with under POLICE. The standing joint committee of the County Council and the justices has the same duties in London as in other counties, but it has nothing to do with the police.

Before the passing of the Metropolis Local Management Act, 1855, administrative local government in London was in a state of confusion. For many purposes there was no central authority at all, and the district authorities

were numerous and diverse, with limited and conflicting powers. For two purposes the corporation of the City of London was a central authority. In 1327, by charter of Edward III., the corporation was granted the exclusive right of erecting markets in the city, and within seven miles of St. Paul's. These rights continue in force till the present day. See MARKETS, page 487.

The other matter with regard to which the corporation exercised powers extending far beyond the limits of the city was the conservancy of the Thames. By a charter of James I., the corporation was granted the conservancy of the Thames from Staines in Middlesex to Yanleet Creek in Kent. Disputes arose as to the rights of the crown and the corporation in the bed and soil of the river, and a compromise was made under which in 1857 the corporation's rights were transferred to the Thames Conservancy Board. Other authorities which exercised jurisdiction over the whole or most of London before 1855 were the Metropolitan Commissioners of Sewers, the officials under the Metropolitan Building Act, 1844, and the justices. Practically the only district authorities before 1855 were the vestries of the parishes and certain Boards of Improvement Commissioners appointed under private acts.

In 1855 the Metropolitan Board of Works and the Metropolitan Vestries and District Boards were created by the Metropolis Management Act of that year. The area chosen for the metropolis as defined by that act was practically the area of the present administrative County of London, though the boundaries have been slightly altered under recent acts.

All the powers and duties of the Metropolitan Board of Works were transferred to the London

County Council in 1888. The vestries and district boards under the Act of 1855 were the local sanitary authorities outside the city, and although their constitution was altered by the Local Government Act, 1894, they continued to exist till the creation of the metropolitan boroughs by the London Government Act, 1899.

The Local Government Act, 1888, made a great change in the government of London. It created the new County of London, and provided it with an organization for non-administrative purposes which has already been referred to. It also created the administrative County of London out of the County and the City of London, and directed that a county council should be elected for that area. The London County Council consists of 118 councillors, 19 aldermen, and a chairman, who may or may not be a councillor or an alderman. There may also be a vice-chairman and a deputy-chairman. The councillors are elected for three years, the aldermen are elected by the councillors for six years, and the chairman, vice-chairman, and deputy-chairman are elected annually by the councillors and aldermen, but outgoing aldermen may not vote. Women are not eligible as county councillors.

In addition to all the property, powers, and duties of the Metropolitan Board of Works, the London County Council also obtained all additional powers and duties conferred upon county councils generally by the Local Government Act, 1888. Since that date further powers have been conferred upon it by a large number of acts, both local and general. The direct administrative work of the County Council as a central authority for London includes the following important matters: the construction and

maintenance of the main drainage system of London; the maintenance of ten bridges over the Thames, between twenty and thirty other bridges, the Woolwich ferry, and the Blackwall tunnel; the maintenance of the Thames embankments; the making of large metropolitan improvements, and contributing to the cost of local improvements; the management of existing parks and open spaces, and the purchase of new ones; the management of the Metropolitan Fire Brigade, and of the county lunatic asylums, reformatory and industrial schools; the clearing of insanitary areas; the building of houses for the working classes, and the erection and management of common lodging-houses; the appointment of coroners, and the provision of places for holding inquests; the purchase, leasing, and working of tramways; a service of passenger steamers on the Thames; the administration of the Contagious Diseases of Animals Acts; the provision of small holdings; the management of lands and houses belonging to the council, of the estimated value of between two and three millions; and the execution of a considerable part of the council's own works by means of its works department.

The council also exercises large powers of supervision over the work of the local sanitary authorities, and can take action itself when they are in default. It licenses theatres outside the Lord Chamberlain's district; all music halls in London; racecourses within ten miles of Charing Cross; slaughter-houses, cow-houses, and places for carrying on offensive businesses; all factories, magazines, and stores for making or keeping explosives and petroleum; and houses for the reception of children under the Infant Life Protection Acts. It

examines and approves plans, and makes by-laws under the London Building Act. It appoints inspectors of dairies and cow-sheds, inspectors of weights and measures, and for the purposes of the Sale of Coal Act, Shop Hours Act, and Factory and Workshops Acts. It appoints gas examiners, and tests gas and electric meters; and exercises duties with regard to the prevention of floods and the pollution of rivers. It makes by-laws for a number of purposes, and has powers to promote and oppose bills in Parliament affecting London. Its current expenditure is provided for by the county rate, assisted by the Exchequer contribution; and its capital expenditure is met by the creation of London County Council stock and bills. All new borrowing must be sanctioned by Parliament, and the council introduces an annual money bill, which includes all the capital proposed to be borrowed, both for the purposes of the council and of the other local authorities in London, who must all borrow through the council. By the Education (London) Act, 1903, the Education Act, 1902, is applied to London. The London School Board is abolished, and the County Council is made the education authority for London, and appoints the Education Committee.

The local or district administrative authorities in London are the councils of the twenty-eight metropolitan boroughs created by the London Government Act, 1899, and the Corporation of the City of London. The metropolitan boroughs are not boroughs within the meaning of the Municipal Corporations Acts. Each metropolitan borough has a council consisting of a mayor, aldermen, and councillors; but the council is really only a district authority created because of the

enormous size of London, to exercise those subordinate powers and duties which can best be administered locally, while the real central authority is the County Council. The borough councils are the local sanitary authorities, and exercise nearly all the powers of the London Public Health Act; all powers with regard to the construction and maintenance of sewers and drains, except main drains; and the making, maintaining, lighting, watering, cleansing, and regulating of the streets. They provide and manage baths and wash-houses, public libraries, and minor open spaces. They have the powers formerly exercised by Burial Boards under the Metropolitan Burial Acts, and are the local authorities under the Electric Lighting Acts, the Allotment Acts, and for some purposes of the London Building Act. They are the overseers of the poor within their boroughs; and they collect the whole of the rates of London, not only for their own expenses, but for all the other spending authorities in London.

In addition to the powers possessed by the borough councils, the corporation of the city exercises some powers within the city which elsewhere in London are in the hands of the County Council, such as the management of lunatic asylums and reformatory and industrial schools, and the powers as to petroleum, explosives, and weights and measures. They also possess and manage four bridges over the Thames—Blackfriars Bridge, Southwark Bridge, London Bridge, and the Tower Bridge, which are all maintained out of the revenues arising from the Bridge House Estates. The city markets have already been referred to; and the corporation have also provided, out of the proceeds of an old duty on grain, certain open spaces

outside the County of London, but within twenty-five miles of it, the principal of which are Epping Forest and Burnham Beeches. The poor in London are provided for, as in the rest of the country, in parishes and unions, under boards of guardians; but since 1864, and more fully since 1867, some special provisions have been made with regard to London as a whole. Certain expenses have been treated as common expenses, and paid for out of the Common Poor Fund, raised by a uniform rate over the whole of London; and certain services, such as the provision of hospitals for fever, smallpox, and diphtheria patients, have been transferred to a central authority, called the Metropolitan Asylums Board. See ASYLUMS BOARDS.

The water supply of London has been in private hands until quite recently. See METROPOLITAN WATER BOARD.

MARKETS.—There are nine principal markets in London. Three of these — viz. Billingsgate, the London Central Markets, and Leadenhall Market — are within the city, and belong to the corporation, who, under a 'charter in Parliament' granted by Edward III. on March 6, 1326, are the market authority for London. The other six — viz. the Metropolitan Cattle Market, the Foreign Cattle Market (which are also under the control of the corporation), Spitalfields, Covent Garden, Stratford and the Borough Markets — are in the County of London. *Spitalfields Market* was established under a charter granted by Charles II., dated July 29, 1682, and the rights in it are at present leased to Mr. Robert Horner for a term of years at an annual rent of £5,000. Under the provisions of an Act of 1902, however, the corporation has acquired the site of the

market, at a cost of £176,750, and is now negotiating for the purchase of Mr. Horner's rights and interests in the undertaking. The *Stratford Market* was established in 1879, under an Act of Parliament, by the Great-Eastern Railway Company for the sale of the produce carried to London over their system. The *Borough Market*, for fruit and vegetables, is also a parliamentary market. It is carried on by trustees, who apply the profits to the reduction of the poor-rate of the parish of St. Saviour, in which it is situated. *Billingsgate* is the most ancient market in London. It is mentioned in a proclamation dated 1297, and it was given in evidence before the Royal Commission of 1893 that it was used for the sale of fish a thousand years ago. The first Act of Parliament relating to the market was passed in 1699, by which it was made a 'free and open market for all sorts of fish whatsoever.' The total sum expended by the corporation since 1849 in the enlargement and improvement of the market has been between £300,000 and £400,000. The supplies of fish to Billingsgate arrive both by land and water, and in 1903 these amounted to 127,792 tons by land and 68,529 tons by water. *Smithfield* was an existing market in 1253, and from 1614 to 1855 was utilized for the sale of live stock. In the last-named year it was removed to its present site at Islington, and became known as the *Metropolitan Cattle Market*. The new market occupies a site of about 75 acres, and cost £504,842. It finds employment for 1,600 persons, and in the market area two blocks of model dwellings, accommodating 124 families, have been erected. The number of cattle consigned to the market in 1904 was 606,179, and the receipts from all sources in the same

year amounted to £19,511. In 1909, the respective figures were 425,615 and £23,709. The supplies to the market show a diminution year by year, due to, among other causes, the growth of local markets within a short distance of London and the ever-increasing development of the chilled and frozen-meat trade. The *Foreign Cattle Market* at Deptford was opened in December 1871, 'for the landing, reception, sale, and slaughter of foreign animals, with a view to the prevention of the introduction into Great Britain of contagious diseases, and was enlarged in 1881. A sum of £379,500 was expended by the corporation in acquiring the site of 30 acres and in constructing the market, which includes twelve lairages, capable of accommodating 5,000 cattle and 22,000 sheep; 54 slaughter-houses and chill rooms with accommodation for 4,500 sides of beef. The number of animals landed at the market during 1904 was 240,534. In 1909, the number was, owing to restrictions upon importations under the Diseases of Animals Act, 1869, only 122,302. The *London Central Markets* stand partly on the site of old Smithfield Market, and were opened in December 1868. They comprise a meat market, a poultry and provision market, and a general market with poultry and provision, inland fish and fruit, vegetable and flower sections. The last-named section took the place of Farringdon Market, which had become inconvenient and incommodious, and was discontinued in June 1892. The meat market, which affords direct and indirect employment to 9,000 persons, and the erection of which involved a capital expenditure of £1,075,000, is believed to be the largest dead-meat market in the world. It is strictly wholesale except on

Saturday afternoons, when the 'People's Market' is held. The poorer classes from all parts of London attend by thousands on these afternoons, when a large retail business is transacted. The total expenditure on the Central Poultry and Provision Market amounts to £332,000, and on the various sections of the general market to £533,000. The official returns show that during 1909 the total weight of fish, meat, poultry, provisions, and general produce delivered at the Central Markets was 421,826 tons, of which about 95,300 tons was British produce, and about 325,000 tons colonial and foreign produce. The toll on this quantity was £46,824, while the receipts from all sources in 1909 were £141,417. *Leadenhall Market* has existed from very early times, and was an ancient prescriptive market for the sale of meat, poultry, game, and provisions. An Act of 1879 abolished the then existing market, and empowered the corporation to improve the site, lay out and form new streets, and construct a new market for the sale of 'meat, fish, and poultry and other provisions.' This new market, with its approaches and avenues, cost £247,800, and was opened in December 1881. No record is kept of the supplies to this market. The corporation have spent upon their markets, from time to time, a sum of not less than £3,500,000. *Covent Garden Market* is held by the Duke of Bedford under a charter granted by Charles II. to the then Earl of Bedford, and under a regulating Act of 1828. It has long ceased to be the 'filthy and noisy market held close to the dwellings of the great' described by Macaulay. The present owner has, at the cost of many thousands of pounds, improved and extended the market, and has provided lofty and

commodious buildings in which what is probably the largest wholesale business in fruit, both home-grown and foreign, vegetables and flowers, in the world is carried on daily. As the market is private property, no statistics as to the annual volume of its trade are published, but it is understood that the net receipts average nearly £10,000 a year. A word or two should be said about *Columbia Market*, one of the most elaborate pieces of Gothic art in the metropolis. This was the gift of the Baroness Burdett-Coutts to the Bethnal Green district, and was opened in 1869. It is believed to have cost £250,000, and was intended to place within the reach of the dense population around it supplies of provisions, and especially of fish, of better quality and at more reasonable prices than they could be procured at through the small dealers and hucksters who had previously monopolized the trade. But the grand conception, splendidly undertaken and magnificently carried out, has been a disastrous financial failure; and though one part of the building is still in use as a vegetable, hay, and straw market, the great market-hall and its chief adjuncts are practically perishing for lack of use.

TRAFFIC.—The problem of London traffic presents two broad aspects. The one is concerned with facilities for getting from the outside to the inside of the metropolis, and vice versa; and the other with progression in the main thoroughfares of the central districts. A third question which is involved in the general problem is the constitution of a tribunal or authority, similar, it may be, to the Rapid Transit Commission of New York, which shall be especially charged with the co-ordination, the control, and the regulation of the whole of the

traffic projects in and for London. The solution of these questions was committed to a royal commission on Feb. 10, 1903. The reference was framed in the widest possible terms. The commissioners issued their report on July 20, 1905, the main conclusions of which are briefly stated here. The population must be taken out of London in many directions at rapid speed, frequent intervals, and cheap rates, as to rehouse them 'on site' is far too costly. The commissioners therefore recommended the construction of two main avenues through London, each 140 ft. wide—one, from east to west, to connect Bayswater Road with Whitechapel; and the other, from north to south, to connect Holloway with the Elephant and Castle. These avenues are to have four lines of tramways on the surface, and four lines of railway beneath, both to be worked by electricity, so that express trains and local stopping trains may be run on different rails. The total cost is estimated at 24 millions sterling. The widening of several other streets, a viaduct at Blackfriars Bridge, and a bridge across the Strand are among the other recommendations. The commissioners advised a great extension of tramways in London and in the suburbs; through connection between the different tramway systems; that provision be made for running outside as well as inside the county, and that the power of veto presently exercised by local authorities be abolished. They also recommended the establishment of a traffic board, which should keep in touch with all the local authorities in Greater London, and maintain a friendly attitude towards them and towards all companies working railways, tramways, or other means for facilitating locomotion and

transport. So far (1911) no legislative steps have been taken to give effect to the last-named recommendation. What may prove to be the initial step to the adoption of this particular recommendation was taken in August, 1907, when a special 'London Traffic Branch' of the Board of Trade was constituted under the direction of Sir Herbert Jekyll. It has already begun an inquiry into the question of arterial roads with a view to ascertain the requirements of London in this respect.

A few figures will serve to illustrate the nature of the problem. Every day in the week, except Sunday, there enter the central districts, by railway, tramway, and omnibus, before half-past ten in the morning, something like half a million of people from north and south of the Thames. For all these people, of course, cheap and rapid locomotion is an absolute necessity. It was given in evidence before the Traffic Commission that 15,000 tram car journeys were run daily in London; that the number of passengers carried in the London County Council cars alone amounted to about 200,000,000 annually; that the London roads were traversed, it was impossible to say how many times daily, by 4,000 omnibuses, and that they conveyed annually 500,000,000 persons. There were, in addition, between 7,500 and 8,000 hansom cabs, and about 4,000 'four-wheelers,' which were more or less constantly plying for hire in the streets of the metropolis. When to these figures there are added the almost countless carts, vans, drays, lorries, and trolleys which use the streets, some idea may be gathered of the daily volume of vehicular traffic within the metropolitan area. It was stated that at the Bank, for instance, nearly 800 vehicles

passed each hour of the day; that through Oxford Street there was an hourly traffic of 550 vehicles; that some 500 vehicles per hour passed the junction of Oxford Street and Tottenham Court Road, while a still greater traffic went along what is called the Piccadilly and Charing Cross route from Hammersmith to the city. And all this traffic has grown up while, with a few notable exceptions, the streets of London have remained as narrow and as irregular as they were a hundred years ago.

Take another feature of the problem. Sixty years ago the number of railway stations in London was eight. These were Euston, Paddington, Addison Road, Nine Elms, Bricklayers' Arms, London Bridge, Shoreditch, and Fenchurch Street. To-day, it is estimated, there are nearly 300. Within the area of what is known as Greater London there were in 1905 530 railway stations, and this number has been increased to upwards of 600 by the opening of the underground or 'tube' railways which were at that time in course of construction. The length of the trunk lines, local lines, local joint lines, and tubular lines, including those now building, in Greater London exceeds 630 miles. There are within the metropolitan area 22 stations which may be regarded as termini, and into these there pour daily no fewer than 4,697 trains, of which 4,252 represent suburban traffic. The underground and surface railways operating in London, acting as distributors and feeders of the trunk lines, carry not less than 600,000,000 passengers per annum, and it was estimated that the new accommodation being provided in 1905 would afford greater facilities, to an extent ranging from 400,000,000 to 450,000,000 additional passengers a year. Two

or three other figures, for which the Board of Trade is responsible, illustrate the growth of the 'intra-mural transportation' aspect of the problem. In 1881 the number of passengers carried by local railways, tramways, and the principal omnibus companies was 269,662,649. In 1908 the number had increased five-fold, to 1,377,680,180, and this was exclusive of the cab traffic and the very large suburban traffic carried by trunk railways. The annual number of journeys per head of the population was 1429 in 1903. In 1908 the number had increased to 1881.

The development of the tube railways, and the electrification in 1906 of the Metropolitan, and the District Underground and some of the local railways, have done much to alleviate the difficulties of 'intra-mural transportation.' There were seven tube railways in actual operation in 1908, and these, with the Metropolitan, District, and Inner Circle railways, represented a total length of 109 m. By an Act passed in 1910, three of the tube railways—viz the Baker Street and Waterloo; the Great Northern, Piccadilly and Brompton; and the Charing Cross, Euston, and Hampstead—were amalgamated with a capital of £12,600,000. These railways are worked by the Underground Electric Railways Co. of London, which also exercises a powerful influence over the District railway and the London United Tramways Co. The amalgamation is advantageous to the public, and Sir Herbert Jekyll, in his report, expressed the view 'that an extension of the principle to the whole of the electric railways and tramways of London would be attended with still greater benefit.' The Baker Street and Waterloo railway, which runs from Paddington

to the Elephant and Castle, was opened in 1906. It is 5 m. long, and has two running tunnels of a diameter of 11 ft. 6 in. The Great Northern, Piccadilly, and Brompton line, which has a length of 10 m. and tunnels of 11 ft. 8 $\frac{1}{2}$ in. diameter, runs from Finsbury Park to Earl's Court, and, by a branch line, from Holborn to the Strand. The northern and eastern sections of the railway form a link between the Great Northern and Midland termini at King's Cross and St. Pancras and the west of London, and the western section provides a route from the far west of London to Piccadilly. At Piccadilly Circus it makes connection with the Baker Street and Waterloo railway, and at Cranbourne Street with the Charing Cross, Euston, and Hampstead railway. The Charing Cross, Euston, and Hampstead railway, with its northern overground extension from Edgware to Hampstead, gives communication between Edgware, Hendon, Hampstead, Highgate, Kentish Town, and Camden Town and the city. At Euston it exchanges traffic with the City and S. London; at Oxford Street with the Central London railway, and at Cranbourne Street with the Great Northern, Piccadilly, and Brompton railway. The total length of the line is slightly over 8 m. The Edgware and Hampstead surface light railway, over which the trains of the Charing Cross, Euston, and Hampstead railway will travel to Edgware, is about 6 m. long. The period for its construction, together with that of an auxiliary line from Edgware to Watford, was, in 1909, extended for two years. The City and South London, the first tube railway constructed in London and opened in 1890, runs from Clapham Common, on the south, to the Angel, on the north of

the river, with an extension to King's Cross and Euston. The length is just over 7 m., and the authorized capital of the company £4,591,859. The Waterloo and City line, with a capital of £720,000, is a small tube running from under the main terminus of the London and South-Western railway at Waterloo to the Bank. The Central London, or the 'Twopenny Tube,' as it is popularly called, has a length of 6 m. 7 fur., and a capital of £4,126,000, and runs from Shepherd's Bush to the Bank, with many intermediate stations. It is being extended to Liverpool Street. The Great Northern and City, which was opened in February 1904, has a length of 3½ m., from Finsbury Park to Moorgate Street, and an authorized extension of a quarter of a mile to Lothbury (City). The capital of the company is £3,077,416. The number of passengers carried by these tube railways in 1909 was 168,000,000—an increase of 7,000,000 on the previous year. On the whole of the London electric railways, the passengers carried in 1908 numbered nearly 350,000,000, as compared with about 223,000,000 in 1903. The issued capital (share and loan) of these railways is £55,983,354, and the return on this is put by the comptroller of the London County Council at 2 per cent.

Two further similar railways were authorized by Parliament in the session of 1906. The more important was known as the City and North-East London railway, and was to be constructed partly in tube and partly in the open. Its city terminus was to be at the Monument, whence it ran to Hackney Road in tube. It then came to the surface, and, running through the densely-populated district of West Ham, was to proceed to Waltham Abbey, its

county terminus. The route thus followed is almost precisely that suggested by the joint committee on tube railways. The total length of the proposed railway was nearly a dozen miles, and the capital involved about £4,000,000. The scheme is meanwhile in abeyance.

The second railway authorized was intended to serve the western side of the county. As far back as 1899 a company received powers to construct a tube railway from Cricklewood to the Marble Arch. The scheme was, for a variety of reasons, not proceeded with, and also remains in abeyance. The County Council sought parliamentary sanction in 1911 for the construction of a tramway from the Marble Arch to Cricklewood, but the committee of the House of Commons which considered the proposal was equally divided on the question whether it should be allowed to proceed, and, acting on an intimation by the chairman, the promoters withdrew the scheme. The feature to which the strongest objection was taken was the 'dead end' terminus at the Marble Arch.

Other enterprises which are working towards the solution of some of the present difficulties are the extension of the electric tramcar service, and the increasing substitution of mechanical for horse traction in the London streets. There were in actual operation at March 31, 1910, just over 132 m. of County Council tramways, of which 112 m. were worked by electric traction and 20 m. by horse power. The total capital expenditure on the undertaking at the same date amounted to £10,709,503, and during the financial year ended March 31, 1910, the number of passengers carried was 451,439,216, as compared with 314,227,090 in the previous year. Further tramways

are in course of construction in different parts of the county, and additional schemes, providing for over 22 m. of line at an estimated cost of £500,000, are under the consideration of the council. Since the Traffic Commission reported, the council trams on the north and south sides of the river have been linked up by means of the construction of lines over Putney Bridge and Vauxhall Bridge, and of a subway from Holborn to the Victoria Embankment at Waterloo Bridge, and, in addition, the 'dead ends' at Westminster Bridge Road and Blackfriars Road have been got rid of, with all the inconvenience and congestion that inevitably accompanied them, by the opening of Blackfriars and Westminster Bridges to tramway traffic. The subway from Holborn to the Embankment is constructed a few feet beneath the surface. The route is three-quarters of a mile in length, and for two-thirds of the distance it comprises a 'cut and cover' tunnel measuring 20 ft. in width and 14 ft. in height. In passing under the Strand and Holborn, the tramway, which is worked on the conduit system, is in twin tubes, and access to intermediate stations is gained from the street refuges. The cost of this important work is placed at £300,000. For the purpose of carrying the double line of tramways over Blackfriars Bridge, the bridge was widened by the City Corporation, from 75 ft. to 105 ft. between the parapets, at a cost of over £200,000. At the same time, the County Council constructed under the northern end of the bridge two subways for pedestrians, of a total length of 500 ft., at a cost of £30,000. A great scheme of electrification is in progress on the north side of the river, and extending beyond the county boundary into Middlesex and Hertford-

shire. In June 1905 the County Council inaugurated, at an expenditure of nearly £300,000, a municipal service of passenger steam-boats on the Thames—a great highway which, for this purpose, had been lying derelict for several years. It was hoped that, apart from its pleasure aspect, the service would afford new facilities for connection between the north and south sides of the river, but the enterprise was carried on at a loss, and finally, in 1908, it was abandoned, and the thirty steam-boats were sold for £18,204. The council obtained powers in 1909 to construct a tunnel under the Thames between North and South Woolwich, for the use of pedestrians, at an estimated cost of £112,000. It has carried out, and is carrying out, at an expenditure which, in the aggregate, amounts to millions of money, immense street improvements, in the straightening and widening of thoroughfares such as the Strand and Fleet Street and Piccadilly, and the construction of new broad arteries for the purpose of giving additional accommodation for the street traffic. The opening (October 1905) of the thoroughfares of Kingsway and Aldwych completed the principal part of the great Holborn and Strand improvement scheme. The substitution of motor for horse-drawn omnibuses has proceeded rapidly since the report of the Traffic Commission. In 1899, only 5 motor omnibuses were licensed against 3,621 horse-drawn ones. In 1905, the respective figures were 241 and 3,484; while in 1909 they were 1,180 and 1,771. The number of mechanically driven four-wheeled vehicles, other than omnibuses, licensed in 1909 was 3,956, in addition to 2,198 tram-cars. The London United Electric Tramways Company, who bring millions of passengers annually to the county boundary, are con-

tinually extending their undertaking on the western side of the metropolis. Several of the railway companies which have to deal with a vast suburban traffic have electrified, or are in process of electrifying, the lines on which it is carried; while other companies, with a perfect tangle of lines and several hundreds of stations within the limits of the county, have the question of electrification under consideration. The summary of what has been done in all these matters since the report of the Traffic Commission in 1905, which appeared in Sir Herbert Jekyll's report for 1908, may be appropriately quoted here:—264 m. of new 'tube' railway opened; the substitution of electrical for steam working on 68 m. of railway; the reconstruction of 284 m. of horse for electrically worked tramway in the administrative county; the construction of 80 m. of new electric tramways in the outer area; the connection of detached tramway systems north and south of the Thames; the opening for traffic of Vauxhall Bridge and Rotherhithe tunnel; the completion of Kingsway, Aldwych, and other new streets; the widening of Piccadilly and other important streets and roads; the introduction of more than 1,000 motor omnibuses, and a still larger number of motor cabs; the rapid growth in motor traffic generally, and a corresponding diminution in horse traffic; and a large increase in traffic facilities on urban railways, tramways, and omnibuses. The only direction in which nothing has been done in the way of improvement is in the regulation of the street traffic. An infinite variety of suggestions has been made towards this end.

Subways for passengers have already been constructed at the northern end of Blackfriars

Bridge (mentioned above), across the junction of Parliament Street and Parliament Square, from the Bank to the Mansion House, and at the Elephant and Castle, perhaps one of the busiest and most dangerous crossings in London. Two other schemes for giving additional vehicular traffic facilities have taken shape at the instance of the City Corporation. The one is the widening of Southwark Bridge, which runs across the Thames from Queen Street on the north side to Southwark Bridge Road on the south, at a cost of £261,000, and the other is the building of a new bridge over the river, to be called St. Paul's Bridge, between Blackfriars Bridge and Southwark Bridge, at an estimated expenditure of £1,646,983. These received Parliamentary sanction in 1911.

LONDON PORT is still, as it has been for at least two centuries, the greatest port in the world in respect of the amount of shipping and of goods which enters it. The total shipping entering it is, roughly speaking, one-fifth of the total shipping of the United Kingdom; while the value of the commodities imported at the port is, approximately, one-third, and of the exports about one-fourth, of the total value of the imports and exports of the whole of the country. The total value of the imports increased from £169,564,000 in 1901 to £181,061,250 in 1905, and the exports from £92,600,200 in 1901 to £103,943,750 in 1905. In 1909 the value of the imports had risen to £205,639,879; and of the exports to £136,974,484. The control and management of the business of the port was transferred on March 31, 1909, from the Thames Conservancy to the Port of London Authority. The creation of this public body was the culmination of a long

agitation, both in Parliament and out of it, against the antiquated constitution of the Thames Conservancy and the retention of the principal docks in the river in the hands of private companies. The demand for some alteration of the existing unsatisfactory state of things became so urgent that in June 1900 a royal commission was appointed 'to inquire into the present administration of the Port of London and the water approaches thereto; the adequacy of the accommodation provided for vessels, and loading and unloading thereof; the system of charge for such accommodation, and the arrangements for warehousing dutiable goods; and to report whether any change or improvement in regard to any of the above matters was necessary for the promotion of the trade of the port and the public interest.' Two years later the royal commission made their report. Their main recommendation, upon which all their other suggestions hinged, was that the whole of the tidal river and the undertakings of the three dock companies should be placed under the sole control of a new port authority, consisting of forty representatives of the London County Council, the City Corporation, the Admiralty, the Board of Trade, shipowners, traders, and other interests. It was also recommended that this port authority should spend £4,500,000 on dock extension, and £2,500,000 for the deepening of the river, and that the interest on the port stock to be issued for the purchase of the docks and the payment for the new works, estimated at between £30,000,000 and £40,000,000, should be guaranteed by the London County Council. A bill embodying, in the main, the recommendations of the commission was introduced by the government in the session of 1903,

and referred to a joint-committee of the two houses. The bill was carried over till the session of 1904, but in consequence of the opposition it evoked, the government dropped it. The London County Council, however, promoted a bill in the session of 1905, which, though largely a transcript of the government bill of 1903, differed materially from that measure in the provisions relating to the compensation of dock debenture holders and the financial powers and constitution of the port authority. The bill was thrown out in April. No further legislative attempt to deal with the question was made till 1908, when the government introduced a bill which, in June of that session, was referred to a Joint-Committee of Lords and Commons, presided over by Mr. Russell Rea, M.P. The bill provided for the constitution of a Port Authority to administer the port, which was described as extending from Teddington to a line from Havengore Creek to Warden Point, 51 miles from London Bridge, and to take over the property, powers, and obligations of the London and India Docks Co., Millwall Dock Co., Surrey Commercial Docks Co., and the Watermen's Co., so far as it related to the river. As it was not possible to frame a register for the election of the first Authority, the Board of Trade was empowered, 'after consulting persons and bodies with experience in connection with the port,' to appoint the members and also the first chairman. It was provided that the Authority was to consist of a chairman and vice-chairman, who must be appointed from outside, 15 members (in the Joint-Committee this number was increased to 18) elected by the payers of dues, owners of river craft and wharfingers, and 10 'appointed' mem-

bers, who, in the bill as it became law, were allocated as follows:—The Admiralty, 1; Board of Trade, 2; London County Council, being members of the council, 2, and not being members of the council, 2; Corporation of London, being a member of the corporation, 1, and not being a member of the corporation, 1; and Trinity House, 1. The bill proposed that the first Authority should hold office till June 1, 1913, but this period was altered by the committee to June 1, 1912, when the 18 elected members will be elected on a register framed in accordance with the provisions of the bill.

The terms on which the property of the dock companies was transferred to the Port Authority were settled by agreement, as the result of negotiations set on foot by Mr. Lloyd George, then president of the Board of Trade. The total cost of the transfer was £22,362,976. This was met by the creation and the issue of 3 per cent. 'A' stock and 4 per cent. 'B' stock, in such proportions as to give the shareholders in the dock companies an equivalent income. The interest on the stock amounts to £799,996 annually, and this, it is believed, will be more than met by the adjusted net income of the undertakings, which, on the average of the six years previous to 1908, was placed at £808,889. Taking as a basis the figures submitted to the Royal Commission, it is estimated that the new Authority will, within the first ten years of its existence, have to incur an expenditure of nearly £7,000,000 in dredging and deepening the river, and in improving, enlarging, and equipping the docks, and by the Act the Authority is authorized to borrow to the extent of £5,000,000, by the issue of stock. The sources of revenue include tonnage dues on all ves-

sels entering the port, rates on goods brought into the port, charges in respect of all vessels and goods entering the docks, and a registration fee for barges and other river craft. The Authority is also invested with wide powers to purchase by agreement such docks and undertakings as they may consider desirable.

Sir Hudson Kearley (now Lord Devonport), who, as parliamentary secretary to the Board of Trade, was associated with Mr. Lloyd George in the conduct of the bill through the House of Commons, was appointed first chairman, and Sir Owen C. Philipps, M.P., vice-chairman of the Authority. By the same Act, the constitution of the Thames Conservancy was amended (it now consists of 28 members) and its powers restricted to the portion of the river above Teddington.

LONDON UNIVERSITY, South Kensington, S.W.—The history of the foundation of the University of London is a little involved. In 1827 an appeal for funds was made for a university open to students of every religious belief, when no less than £160,000 was subscribed. The foundation-stone of the institution in Gower Street—known in its early days as the London University, and now known as University College—was laid in the same year by the Duke of Sussex, and in the following year classes in the faculties of arts, law, and medicine were opened. Owing to the opposition of various chartered bodies and of the promoters of King's College, which was opened (1831) to provide an education of university character combined with instruction in the doctrines of the Established Church, it was not till 1836 that the Privy Council decided to incorporate the new institution under the name of Lon-

don University College, and to establish a distinct examining body to be called the University of London, which should have the power of conferring degrees on students of approved schools and colleges without the imposition of any religious test or disqualification whatever. The compromise was willingly accepted by the promoters of the original institution, and on the same day (Nov. 29, 1836) charters were duly granted by King William IV. to London University College and to the University of London, provision being made that the university should be under the general control of the government. Only the main events in the history of the new university since its incorporation can here be mentioned. In 1854 the university was given the privilege, already enjoyed by Oxford and Cambridge, of granting degrees in medicine. Four years later, by the charter of 1858, the connection between the university and its affiliated colleges was practically abolished, the examinations, excepting only those in medicine, being thrown open to all comers. Special examinations for women were inaugurated (1867), and in the same year the members of Convocation, consisting of graduates of three years' standing, were given the privilege of sending a representative to Parliament, Robert Lowe being elected (1868), Sir John Lubbock (1880), Sir Michael Foster (1900), and Sir Philip Magnus (1906). The new buildings in Burlington Gardens were inaugurated by Queen Victoria (1870). The special examinations instituted for women met with little success, and in 1878 it was decided that every degree, honour, and prize awarded by the university should be made accessible to students of both sexes, on perfectly equal terms.

Towards the close of the 19th century a feeling arose, and gradually gained strength, that, while the work of examining might be allowed to continue unimpaired and unrestricted, a great deal more might be done in the direction of supervising the teaching of university character in colleges in or near London. In 1892 a royal commission, generally known as the Gresham Commission, with Earl Cowper as its chairman, inquired into all questions relating to the university work in London; and finally, after prolonged and vigorous controversy, the University of London Act was passed (1898), by which commissioners were appointed whose chief duty was to frame statutes which were signed and sealed by the commissioners (Feb. 13, 1900) and approved by Parliament (June 29 following). The university now consists of the chancellor, the existing fellows for their respective lives, the senate, the graduates, and the students. Professor A. W. Rücker, M.A., D.Sc., F.R.S. (now Sir Arthur Rücker) was appointed principal of the university (1901). He resigned in 1908, and was succeeded by Professor Henry Alexander Miers, D.Sc., F.R.S. The former examining work of the university has been continued without any break of continuity, the senate being advised in this part of its work by a council for external students. But since the reconstitution a great change has taken place in the relation between the university and the various colleges and institutions within the prescribed circle of thirty miles round the university. Any such public college or institution, in which the teaching is of university character, may apply for recognition as a 'school of the university,' whose students, known as 'internal students,' are allowed, after they have passed

through the courses of study prescribed, to enter for the internal examinations, which are generally distinct from the external examinations. The courses of study and the teachers of these colleges are also recognized, provided they fulfil the prescribed conditions. To meet the needs of certain institutions, such as the London polytechnics, whose work is only in part of university character, it was provided that teachers in these institutions might be recognized, and that students who had attended the prescribed courses of study under such teachers should enjoy all the privileges of 'internal students.' The 'schools' of the university include the medical schools attached to the eleven great hospitals of London, the Royal College of Science, the Central Technical College, the London School of Economics, seven theological colleges, three colleges for women—viz. Bedford College, Holloway College, and Westfield College—and one agricultural college, Wye College—the last being the only school of the university situated beyond the appointed radius. The senate, acting on the advice of an academic council, is now able to exercise a strong and healthful influence over the higher education of the metropolis. Arrangements have been made whereby teachers in the university are consulted, through the university boards of studies, with regard to courses of study and schemes of examination, and they thus exert a far greater influence over the study and examination of their own students than was possible under the old conditions. The good effects of the reconstitution have shown themselves in many other ways. University work in all parts of London has been stimulated or quickened, and the university is now taking

its proper place as the head of a great academic system. Complete schemes of study in all subjects, including intercollegiate courses in the higher branches, have been organized. The Worshipful Company of Goldsmiths have presented to the university their great institution at New Cross known as the Goldsmiths' Institute. A research laboratory in physiology has been opened in the university, and arrangements have been made for the education of university candidates for commissions in the army. In 1907, University College (with the exception of the School of Advanced Medical Studies connected with University College Hospital and the Boys' School established in 1832 under the jurisdiction of the Council) was, under an Act passed in 1905, transferred to and incorporated in the university. As a result, the university came into the possession of land, buildings, and educational appliances of great value, and acquired at once 'a teaching staff of great distinction and an academic organization of proved efficiency and honourable traditions.' By an Act passed in 1908, the powers and duties of King's College in relation to instruction and a university standard in subjects comprised within the faculties in the university other than the faculty of theology, were transferred to the university. As a corollary of the incorporation, twenty-four of the professors of the college received the status of university professors. The important work of the London University Extension Society has been transferred wholly to the university, which also undertakes the examination and inspection of secondary schools, these departments being under the control of a special board. It may be of interest to note that in 1909

there were 842 recognized teachers and 3,987 registered internal students.

Degrees are now given both on the internal and external sides in arts, divinity, science (including degrees in agriculture, economics, engineering, and veterinary science), medicine, music, and laws, special care being taken that the standard of the examinations shall be maintained under the new conditions.

LIVERY COMPANIES.—The Livery Companies, one of the peculiar appurtenances of the City of London, are the successors of the craft guilds. In the reign of Edward III. charters were granted to these voluntary associations, and their ordinances formally recognized and enrolled in the Lord Mayor's court. Each company assumed a distinctive livery, and it is to this fact that they owe their present name, though there is no reference to them as 'livery companies' in the original charters. The companies continued for some time to exercise the functions of the guilds; but their decay as trade organizations began in the early part of the 16th century, and during the last four hundred years they have generally been mainly identified with acts of hospitality and benevolence. A few of them, however, and most notably the Worshipful Company of Clothworkers and the Fishmongers' Company, have remained faithful to their former associations, and still devote large sums to the advancement of the industries over which they once exclusively presided. The ordinary constitution of a livery company embraces the master, wardens, the court of assistants, a livery, and a general body of freemen. The master was originally nothing more than the upper warden; and the Fishmongers and Goldsmiths still retain this principle, and term their chief

executive officer prime warden. The livery was so called from the ancient practice of the periodical delivery of clothing to the members of the company. A liveryman of the guilds who resides within twenty-five miles of the city borders has a vote in the parliamentary elections for the city. The number of such voters is between 7,000 and 8,000. There are seventy-six 'city companies,' to adopt their everyday designation. Twelve of these are known as the 'great' companies, the remainder as 'minor' companies. The majority of the 'great' companies are possessed of immense wealth. Taking them in the order of civic precedence, their total trust and corporate income in 1904 was as follows:—Mercers (first charter, 1393), £111,000; Grocers (1428-9), £38,000; Drapers (1364), £78,000; Fishmongers (1272), £58,692; Goldsmiths (1327), £59,000; Skinners (1327-8), £44,000; Merchant Taylors (1299-1300), £50,000; Haberdashers (Henry VI.), £58,000; Salters (Edward III.), £22,000; Ironmongers (1464), £23,000; Vintners (1364), £11,000; Clothworkers (1527-8), £60,000. The wealthiest of the 'minor' companies are the Leathersellers, £23,000; Brewers, £17,500; Saddlers, £12,200; and Carpenters, £11,638. Much of this wealth is devoted to educational purposes. The City and Guilds of London Institute, for the advancement of technical education, was founded in 1877 by the companies, who contribute the larger part of its annual income of £35,000. The Clothworkers' Company promoted the establishment of Yorkshire College, Leeds, now merged in the Yorkshire University. Merchant Taylors' School was founded in 1561 by Sir Thomas White and the Court of the Merchant Taylors' Company, who are to-day the governing body of the school. The companies largely subsidise

the universities of Oxford and Cambridge in the matter of exhibitions; the Drapers' Company provide a large number of scholarships at the East London Technical College; and between thirty and forty schools in London and the provinces are supported to a considerable extent out of the private income of the companies. It is estimated that they spend about £75,000 a year on educational purposes. They contributed £13,000 to the establishment of the Royal College of Music; and during the ten years 1869-79 the London Hospital received £26,500 from the Grocers alone. The companies expend annually about £75,000 of their trust income on the support of their almshouses and in the relief of poor members, and many thousands a year on benevolent and public objects of a general character. They possess thirty-eight halls in London, the rateable value of which is placed at about £60,000 a year. The value of their plate (which includes some of the finest and rarest specimens of antique silver known to connoisseurs) and furniture is estimated at £320,000; while the capital value of the whole of their property was, in 1880, put at the figure of £15,000,000. A royal commission was appointed in 1880 to inquire into the circumstances and dates of the foundation of the city livery companies, the objects for which they were founded, and how far those objects were now being carried out. The commissioners reported in 1884, but the recommendations they made have never been given effect to by Parliament. See Herbert's *Hist. of the Twelve Great Livery Companies of London*, Hazlitt's *Livery Companies of the City of London* (1892), Ditchfield's *City Companies of London* (1904), and *Report of the Royal Commission* (5 vols. 1884).

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London, co. seat of Middlesex co., Ontario, Canada, on the river Thames, 110 m. w.s.w. of Toronto. It is in the centre of a rich agricultural district; has factories, foundries, railway repair shops, chemical works, petroleum refineries, and sulphur springs. Pop. 40,000.

London, a British battleship of 15,000 tons and 18 knots, launched in 1899. The name has been borne by ships that were present at the battle of Lowestoft (1665), the 'St. James' Fight' (1666), the battle of Solebay (1672), Bridport's action (1795), the battle of Copenhagen (1801), the capture of the *Marengo* and *La Belle Poule* (1806), and the bombardment of Sebastopol (1854).

London, JACK (1876), American author, born at San Francisco. After a very adventurous youth and some years spent in travel over many parts of the world, he went as war correspondent to Japan, Korea, and Manchuria (1904). Among his numerous works are *The Son of the Wolf* (1900), *The Children of the Frost* (1902), *The Call of the Wild* (1903), *The Sea Wolf* (1904), *The Game* (1905), *The War of the Classes* (1905), *Moonshine* and other Stories (1906), *White Fang* (1906), *Love of Life* (1907), *Martin Eden* (1909), *Adventure* (1911).

London and North-Western Railway. This railway was the first trunk line to open a station (Euston) in London. It was incorporated (1846), being an amalgamation of the London and Birmingham, Grand Junction, and the Manchester and Birmingham Rys. The company owns a

total mileage of 1,737 $\frac{1}{2}$, and leases works, etc., 228 $\frac{1}{2}$ miles, the main line extending from Euston, London, to Carlisle in the north, to Leeds in the east, and to Liverpool and Holyhead in the west. With the Caledonian Ry. it forms the West Coast Royal Mail route between England and Scotland. The authorized capital of the company is £133,988,853; and for the year ending Dec. 31, 1910, the receipts were £15,922,697, and the expenditure £9,936,639. The dividend on the ordinary stock in 1910 was 6 $\frac{1}{2}$ per cent. The rolling stock comprises 3,063 locomotives, 9,448 coaches run on passenger trains, and 76,736 goods trucks. The company also owns a fleet of 16 steamers, carrying passengers and cargo between Holyhead and Dublin, Holyhead and Kingston, Holyhead and Greenore, and on Carlingford Lough.

London and South-Western Railway Company. Originally established (1834) as the London and Southampton Ry., the name was changed to its present title when an act was obtained to make a branch line to Portsmouth (1839). The mileage owned, leased, and rented is now 979 $\frac{1}{2}$, the main lines extending to Southampton, Portsmouth, Weymouth, Plymouth, Ilfracombe, Bude, Padstow, and Bodmin. Waterloo Station is the London terminus, and the company has an electric tube railway running thence to Mansion House, City. Total capital expenditure, £51,885,284; and for the year 1910 the receipts were £5,711,641, and the expenditure £3,668,635. The dividend on the ordinary stock for 1910 was 6 $\frac{1}{2}$ per cent. The rolling stock includes 748 locomotives, 26 rail motors, 4,263 passenger coaches, and 14,600 trucks of various kinds. The company owns a fleet of 18 steamers, carrying passengers and cargo between Southampton and France and the Channel Islands, and

between Lymington and the Isle of Wight. It is also part owner of the steamers plying between Portsmouth and Ryde. The Southampton Docks (including the 'Empress Dock,' 18½ ac., and two of the largest graving docks in the world) also belong to this company.

London, Brighton, and South Coast Railway. An amalgamation in 1846 of the London and Croydon and London and Brighton Rys. The main line from London to Brighton was completed 1841. For about a year (1844-5) the atmospheric system was in use between London and Croydon. The main lines of the company run to Brighton, Eastbourne, and Portsmouth, and serve all the coast towns between Hastings and Portsmouth, the total mileage owned being 431½. The capital expenditure is £32,264,288. The gross revenue for the year ending Dec. 31, 1910, was £3,499,598, and the expenditure £2,027,066. The dividend paid on ordinary stock for the year 1910 was 5½ per cent. The rolling stock comprises 535 locomotives, 3,063 coaching vehicles, 113 electric vehicles, and 10,074 goods vehicles. The company also owns a fleet of steamers, carrying passengers and cargo between Newhaven and Caen, and owns jointly with the directors of the State Rya. of France a passenger and cargo fleet between Newhaven and Dieppe. The South London line was electrified in December 1909, and the portion to the Crystal Palace was electrified in the summer of 1911.

London Clay, a formation of Lower Eocene age, is the substratum on which most of London is built. It is a tough, compact clay in which traces of bedding are rarely seen, and, though usually red or brown at the surface, is typically blue-gray at greater depths, owing to the

presence of sulphide of iron. The London Clay is very impervious to moisture, and forms a soil which is damp and cold in winter, while in summer it bakes hard and cracks with the drought. It becomes slippery when wet, and houses which have not sufficiently substantial foundations often develop cracks in their walls. Many brick fields have been opened in the London Clay, especially near the edges of its outcrop, where sand can be obtained to mix with it. It rests on the Oldhaven and Thanet beds. As a rule, it contains few fossils, but in some places shells, remains of plants, birds, fishes, and quadrupeds are found. Often there are bands of large calcareous septaria in the London Clay, which have been used for the manufacture of cement. The London Clay is a marine deposit, apparently laid down near the mouth of a river. See Lyell's *Principles of Geology* (12th ed. 1875), Whittaker's *Geology of London* (1889), and Bowerbank's *Fossils of the London Clay* (1840).

Londonderry. (1.) Maritime co., Ulster, Ireland, with seaboard extending between the Bann and Lough Foyle. In the s.e. it is washed by Lough Neagh. The surface is in great part mountainous, the highest point being Mt. Sawell (2,236 ft.), on the southern border. There are many fertile valleys and low-lying tracts, especially near the northern coast and Lough Neagh. The principal rivers are Foyle, Faughan, and Bann, flowing north, and Moyola into Lough Neagh. Agriculture is the chief industry, and linen is manufactured. The fisheries are valuable. The county is divided into six baronies, and returns two members to Parliament. The greater part of the county was made over by James I. to the Common Council of London and

its connected companies. In 1613 the Irish Society was incorporated, and this, with the Merchants' Company, still retains proprietary rights in the county. Area, 816 sq. m. Pop. (1911) 140,621. (2.) Or DERBY, munici. and parl. bor., city, and cap. of above co., 65 m. N.W. of Belfast. It is situated on a hill, partly surrounded by the Foyle, about 4 m. above its expansion into the lough. The walls, about 1 m. in circuit, were constructed early in the 17th century. Shirt-making is the principal industry, and there are distilleries, foundries, tanneries, and a shipyard. In 1688-9 took place the memorable siege by the forces of James II. Pop. (1911) 40,799. See Dwyer's *The Siege of Londonderry in 1689*, and Waddington's *Guide to Londonderry* (1896).

Londonderry, CHARLES STEWART VANE - TEMPEST - STEWART, MARQUIS OF (1852), English statesman, was born in London, and educated at Eton and Oxford. As Viscount Castlereagh he occupied a seat in the House of Commons (1878-84), when he succeeded to the marquise. Lord Londonderry was lord-lieutenant of Ireland (1886-9), chairman of the London School Board (1895-7). He became Postmaster-general, and was admitted to the cabinet (1899). Lord Londonderry was President of the Board of Education in the Balfour administration (1902-5), and on the retirement of the Duke of Devonshire from the government (1903), he also held the office of Lord President of the Council, and was aide-de-camp to King Edward VII. See also CASTLEREAGH.

London Gazette, THE, official organ of the state, has been published now for nearly two hundred and fifty years. It first appeared in November 1665, under the title of *The Oxford Gazette*, when the court of Charles II. had

been driven to Oxford by the plague; but in the following February the title was changed to that by which it has ever since been known. The first editor, or gazetteer, was Joseph Williamson, under-secretary of state; and among others who afterwards held the post was Sir Richard Steele. The position was much coveted, and was bestowed by the government of the day as a reward for services rendered in political controversy. Down to 1696 a version of the *Gazette* was published in French as well as English. At the present day the *Gazette* is wholly occupied with proclamations of state, promotions, appointments, transfers and retirements of naval and military officers, official and legal announcements, and advertisements inserted in compliance with the law or the order of the courts. The *Gazette*, which is government property, is published twice a week, on Tuesday and Friday. A similar *Gazette* for Scotland is issued bi-weekly in Edinburgh, and one for Ireland in Dublin.

London Military District. The Army Order of Jan. 6, 1905, by which the military commands and staffs of the United Kingdom were reorganized, constituted London a separate district. The area includes the county of London, the Guards dépôt at Catterham, and, for household troops, Windsor. Pirbright is included for training purposes only. Woolwich is included in the eastern command.

London Pride, or NONE-SO-PRETTY, popular name of *Saxifraga umbrosa*, one of the commonest plants in town and cottage gardens.

Long, LOCH, arm of the sea between Argyllshire and Dunbartonshire, Scotland, 5 m. N.W. of Greenock. It extends N. and S. for 17 m. Its western extension is known as Loch Goil.

Long, GEORGE (1800-79), English classical scholar, born at Poulton, and educated at Cambridge, where his career was marked with brilliant success. He held professorships at Charlottesville, Virginia (1824-8), and in the newly-founded University of London, now University College (1828-31), and again from 1842 to 1846. He edited several atlases, classical and modern, a *Political Dictionary*, the series known as the *Bibliotheca Classica*, and published *Two Discourses on Roman Law* (1847), and the *Decline of the Roman Republic* (1864-74); also manuals of Greek and Latin grammar and etymology. See Mathew's *In Memoriam* (1879).

Long, JOHN DAVIS (1838), American jurist and statesman, born at Buckfield, Maine. He was a member of the state legislature of Massachusetts (1875-8), of which state he was governor for three years (1880-2). He was thrice elected to Congress, and in 1897 became secretary of the United States navy, which office he administered with great ability during the Spanish-American war. He has published the *History of the New American Navy*.

Long, WALTER HUME (1854), English statesman, born near Bath; entered Parliament (1880). He sat for N. Wiltshire until 1885, for Devizes (1885-92), for the W. Derby division of Liverpool (1892-1900), and for S. Bristol (1900-5), but was defeated in 1906. Thereupon he was returned for Dublin County, South division. He now sits for the Strand. In the second Salisbury administration (1886-92) he was appointed parliamentary secretary to the Local Government Board, and on the formation of the coalition government (1895-1900) he was made President of the Board of Agriculture. When the government was

reconstructed (November 1900), Mr. Long was made President of the Local Government Board, a post to which he was again appointed in 1902. In March 1905 he became Chief Secretary for Ireland on the retirement of Mr. George Wyndham, a position he held till Mr. Balfour's resignation in December of that year.

Longan, the name given to an Indian evergreen tree, *Nephelium longana*, which grows to almost twenty feet in height, and bears in late spring loose panicles of small white flowers. The flowers are followed by yellow globose berries, containing white, tart, juicy pulp.

Long Beach, seaside resort, California, U.S.A., on San Pedro bay, 20 m. s. of Los Angeles. The pop. has increased from 2,252 in 1900 to 17,809 in 1910.

Long-boat. The largest boat in a ship, furnished with mast and sails, as well as with pulling gear. In old times the chief use of a long-boat was for cruising short distances after merchant ships of the enemy, and for this purpose it was armed.

Long Branch, fashionable seaside resort, Monmouth co., New Jersey, U.S.A., on the Atlantic, 40 m. s. of New York. Pop. (1910) 13,298.

Longchamp, pleasure resort in the Bois de Boulogne, w. of Paris. Its abbey, founded in 1260, was, until its suppression in 1792, a centre of musical attraction during Holy Week. The race for the Grand Prix is run over Longchamp course.

Longchamp, WILLIAM DE (d. 1197), a Norman of low birth, who won the confidence and favour of Richard I., under whom he rose to be bishop of Ely and chancellor. He was throughout a loyal defender of Richard's interests in England, particularly in the matter of raising the king's ransom. See *Gesta Ricardi Regis*.

and Boivin-Champeaux's *Notice sur Guillaume de Longchamp* (1885).

Long Eaton, urb. dist. and vil., Derbyshire, England, 10 m. E.S.E. of Derby; has textile industries. Pop. (1911) 19,215.

Longevity. In considering length of life from the biological standpoint, it is convenient to divide organisms into two categories—those with one reproductive period, and those which reproduce more than once. In the former the whole life history may be run through very rapidly, as in many of our garden annuals among plants; or the life may be divided into a prolonged vegetative period and a brief reproductive period. Thus the so-called biennials among plants accumulate food-stores during their first season, and use these up during the second or reproductive season. If the strain of reproduction be very heavy, then the vegetative period may be greatly prolonged, as in the familiar case of the *Yucca*. Quite similar conditions occur among insects, where the whole life history may be short, or, as in the May-flies or *Ephemeroidea*, larval life may be prolonged though the adult reproductive life is very short. In all such cases death ensues as soon as the needs of the new generation are provided for. Where there is periodical reproduction the matter is much more complicated. In the case of perennial plants, if the food-supply continue sufficient, there seems no reason why life should not be prolonged, unless through accident, almost indefinitely. The same is apparently true of many sluggish and sedentary animals. With most active and highly differentiated animals, however, the length of life is more or less definitely determined for the species, though the reason for the limit is not

quite understood. See an article on the duration of life, in Weismann's *Heredity* (trans. and ed. by A. E. Shipley, 1889-92).

Longfellow, HENRY WADSWORTH (1807-82), the most popular of American poets, was born at Portland, Maine, on Feb. 27, 1807. He was the son of Stephen Longfellow, a Portland lawyer, and Zilpah, daughter of General Peleg Wadsworth, a descendant of John Alden and Priscilla, the 'Puritan maiden' whose fame the poet has preserved in *The Courtship of Miles Standish*. In 1825 he entered his father's office; but disliking the study of law, he accepted the newly-founded chair of modern languages at Bowdoin College, Brunswick, his *alma mater*, with leave of absence for travel. He sailed for Europe in 1826, and during the next three years made a study of European languages, visiting France, Spain, Italy, and Germany. He entered upon his duties at Bowdoin in the autumn of 1829, and proved eminently successful as a teacher. Longfellow published a translation of *Las Coplas* of Don Jorge Manrique (1833), which is said by Professor Torricelli to excel the original in power and literary ease. In the same year he issued a portion of *Outre Mer*, a fruit of his European travel, the second part of which appeared in 1835. A year later he succeeded George Ticknor, the Spanish historian, as professor of modern languages at Harvard; but before entering upon his duties he paid another visit to Europe, particularly to the Scandinavian countries and Switzerland. His wife, Mary Storer Potter, whom he had married in 1831, died at Rotterdam in November 1835, and is commemorated in his poem *The Footsteps of Angels*. *Hyperion* (1839), a poetical romance which enjoyed immense popularity, reflects the

combined influence of Richter and German romanticism on the poet. The heroine of the story, Frances Elizabeth Appleton, became his wife in 1843. *Voices of the Night* (1839) and *Ballads* (1841) awakened the world to the fact that a new poetical force had arisen in literature. These volumes included such familiar pieces as *The Psalm of Life*, *Footsteps of Angels*, *The Skeleton in Armour*, *The Wreck of the "Hesperus"*, *The Village Blacksmith*, *Excelsior*, and *The Besieged City*, all of them remarkable for simplicity of diction, tenderness, and pathos. Two years later a play, without any special merit, *The Spanish Student*, enjoyed an almost equal popularity. Longfellow paid a third visit to Europe in 1842, and on his return home he published his *Poems on Slavery*, a volume including *The Quadroon Girl*, *The Slave Singing at Midnight*, and *The Warning*, which went far towards awakening the American people to a sense of the injustice of negro slavery. *The Poets of Europe* (prepared in conjunction with Professor Felton), *The Belfry of Bruges*, *The Waif*, and *The Estray*, written between 1845 and 1846, widened the poet's fame. These were followed by *Evangeline* (1847), the greatest and best of his longer poems, written in dactylic hexameters, the sentiment of the poem being exquisitely adapted to its measure. *Kavanagh* (1849) proved a failure; but *The Seaside and the Fireside* (1850), a volume of minor poems written in a most engaging form, was more successful; and equally so was *The Golden Legend* (1851)—a romance of the middle ages, based on Hartmann von Aue's *Der Arme Heinrich*—ranking next to *Evangeline*, and containing many passages of rare beauty. Longfellow resigned his chair at Harvard

(1854), which he had held since 1836, in order to devote himself more freely to purely literary work. *Hiawatha* (1855), a legend of the North-East Indians, the outcome of his new and welcome leisure, was written in the trochaic tetrameter measure of the Finnish epic *Kalevala*. It ran through thirty editions in one year. *The Courtship of Miles Standish* (1858) is a romance in hexameters founded on the early history of the Plymouth colony. A collection of minor poems, *Birds of Passage*, appeared simultaneously with *Miles Standish*. In 1861 Longfellow's wife was burned to death in his presence, and from this shock the poet never recovered, although in time he resumed his writing. His charming *Tales of a Wayside Inn* appeared in 1863; a second series of the *Tales* was published in 1872, and a third in 1873. *Flower de Luce and Other Poems* appeared in 1867, *New England Tragedies* in 1868, and *The Divine Tragedy* in 1871, the last a poetical rendering of Leiden's history of Christ. The two last-named works, together with *The Golden Legend*, appeared in 1873 in one volume, under the title of *Christus, a Mystery*. Longfellow's later poems, which show few signs of his advancing years, include *Aftermath* (1874), *The Masque of Pandora* (1875), *Xtramos* (1878), *Poems of Places* (in 31 vols. 1875-78), *Sonnets* (including *Three Friends of Mine*), a translation of Dante's *Divina Commedia* (1871), *Ulisma Thule* (1880), and *Hermes Trismegistus* (1882).

It is difficult to estimate Longfellow's real place among the poets of the world. In imagination and intensity of feeling he is not to be compared with poets of the first rank, yet his poetical powers were of a high order, and his sense of proportion and of melody was exquisite. Moreover,

he was a man of great mental and moral refinement, of high ideals and broad humanity, perhaps the most essential qualities in modern poetry. See *Life* by his brother, the Rev. Samuel Longfellow (1886); *Final Memorials of H. W. Longfellow* (1887), by the same author; Higginson's *Old Cambridge* (1889), and a *Life of Longfellow* in *American Men of Letters* (1902); and Carpenter's *Longfellow*, in the *Beacon Biographies* (1901).

Longford. (1.) Inland co., Leinster, Ireland. It has extensive tracts of bog; on the Leitrim border are bare hills, and in the centre and s. good grazing land. The Shannon, on w. border, expands s.w. into Lough Ree; other rivers are Inny and Camlin. Pasturing and agriculture are principal industries. The county returns two members to Parliament. Area, 421 sq. m. Pop. (1911) 43,794. (2.) Town, cap. of above co., 70 m. w.n.w. of Dublin. It is an agricultural centre, has military barracks, and is the seat of the Roman Catholic bishop of Ardagh and Clonmacnoise. Pop. 3,700.

Longinus, DIONYSIUS CASSIUS (c. 213-c. 273 A.D.), a famous Greek rhetorician, whose place of birth was most likely Athens. Late in life he went to Emesa in Syria, where he met Zenobia, queen of Palmyra, who induced him to become her teacher of Greek literature. After the death of her husband he was her chief adviser, and counselled her to throw off her allegiance to Rome, the result of which was that (273 A.D.) the Emperor Aurelian captured and destroyed Palmyra and executed Longinus. A number of critical, rhetorical, and philosophical works of his are mentioned, but they are all lost. The great work *De Sublimitate*—the finest example of ancient literary criticism—attributed to

him, is probably of earlier date. See edition by Rhys Roberts (1899); Saintsbury's *History of Criticism* (1900-4).

Long Island. (1.) A long narrow island in the Atlantic Ocean, forming part of New York state, U.S.A. It lies off the coast of that state and Connecticut, separated from them by Long Island Sound. Brooklyn and Queen's boroughs of New York city are situated at its western end. The principal places on its N. shore are College Point, Sea Cliff, Glen Cove, Oyster Bay, Cold Spring Harbour, Northport, Setauket, Port Jefferson, and Greenport; and on the s. shore are Coney Island, Rockaway Beach, Far Rockaway, Long Beach, Fire Island, Bay Shore, etc. It is 120 m. long and from 12 to 20 m. wide. Its area is 1,680 sq. m. Pop. 2,700,000. (2.) L. I. CITY, formerly a city of Queen's co., New York, U.S.A., 5 m. N.E. of Brooklyn, at w. end of Long I. It is now included in the borough of Queen's, New York city, and is one of the five boroughs which are united to form the city of New York. It was incorporated with New York on Jan. 1, 1898. (3.) L. I. SOUND, an arm of the Atlantic, separating Long I. from the coast of Connecticut. Length, over 100 m.; width, from 20 to 25 m.

Longitude. See LATITUDE AND LONGITUDE.

Longmans, a London firm of publishers, founded by Thomas Longman, a native of Bristol. Apprenticed when seventeen to John Osborne, a London publisher, he became his partner (1724), and at his death (1734) succeeded to the business. He was the first of five Thomas Longmans who successively extended the firm. The Longmans have been associated as publishers with many famous names in English literature, among them

Wordsworth, Southey, Coleridge, Moore (who had £3,000 for *Lalla Rookh*), Scott, Sydney Smith, Macaulay (who received £20,000 for 2 vols. of his *History of England*), Mill, Disraeli (to whom they paid £10,000 for *Endymion*), Froude, Max Müller, Jean Ingelow, R. L. Stevenson, and Andrew Lang. Lindley Murray's *Grammar*, published by the second Thomas Longman, reached its 70th edition in 1896. The *Edinburgh Review* (purchased 1826) is still the property of the firm. *Longman's Magazine*, a monthly journal of general literature established in 1882, was discontinued in October 1905.

Longnon, AUGUSTE HONORÉ (1844), French scholar and historian, born in Paris; has been successively titular archivist in the imperial archives (1871), director of the *Bulletin* of the Historical Society of Paris and Ile de France (1875), professor at the Ecole des Hautes Etudes (1879) and the Collège de France (1892). His most important works are *Géographie de la Gaule au sixième Siècle* (1878), *Atlas Historique de la France, depuis César jusqu'à nos Jours* (1884-9), *Paris pendant la Domination Anglaise, 1490-1496* (1878), *Pouillé de la Province de Sens* (1904), etc.

Long Parliament, the name commonly given to the fifth and last parliament of Charles I. It met on Nov. 3, 1640, and finally dissolved itself (March 16, 1660). The first few months of the Long Parliament were occupied with the trial of Strafford, the impeachment of Laud, the abolition of the Star Chamber and other special courts, and a bill preventing the king from dissolving Parliament without its own consent. On constitutional matters the members were unanimous, but on ecclesiastical questions a dispute arose which eventually led to the civil war. In

1647, while negotiations were being conducted with the king, a conflict broke out between the Parliament and the army, which ended in the expulsion by the latter ('Pride's Purge') of ninety-six Presbyterian members, and the arrest of forty-six, leaving about fifty members, afterwards known as the 'Rump.' This remnant was responsible for the execution of the king and the establishment of the commonwealth. In 1654 it was turned out by Cromwell, and did not reassemble till nearly six years later (May 8, 1659). It was again expelled (Oct. 13), but was restored (Dec. 26) in consequence of divisions in the army. On the entrance of Monck into London (Feb. 3, 1660) it agreed to dissolve, and issued writs for a general election. See *Political History of England*, vol. vii. *passim* (1907).

Longridge, vil. near Longridge Fell, Lancashire, England, 7 m. N.E. of Preston; has cotton-spinning and weaving, brassfounding, and valuable stone quarries. Pop. (1911) 4,340.

Long Service Medal, MILITARY, a decoration awarded to a non-commissioned officer or private of the regular army who has served for eighteen years with an unblemished character. It carries with it a gratuity of five pounds, payable on discharge, or on promotion to warrant rank. It is more usually known as the good conduct medal.

Longships Lighthouse. See LAND'S END.

Longstreet, JAMES (1821-1904), American general, born at Edgefield, S. Carolina; distinguished himself in the Mexican war, and with the Confederate army in the civil war. He took an important part in the battles of Bull Run and Fredericksburg, held a command under Lee at Gettysburg, and was mainly responsible for the victory of Chickamauga.

where he was severely wounded. After the war he held various civil posts, and served as minister to Turkey (1880-81). He published *From Manassas to Appomattox* (1896).

Longton, tn. in the Potteries dist., Staffordshire, England, 2 m. E.S.E. of Stoke. It was incorporated in 1910 in the newly-formed borough of Stoke-on-Trent. China and earthenware are the staple industries. There are valuable coal and iron mines in the vicinity, also blast furnaces.

Longview, co. seat of Gregg co., Texas, 125 m. E. by s. of Dallas. Pop. (1910) 5,155.

Longwy, tn., dep. Meurthe-et-Moselle, France, near Belgian frontier, 18 m. w.s.w. of Luxembourg. It has iron mines. Pop. 10,000.

Long Xuyen, or LONG CHUYAN, tn., Lower Cochinchina, on the Bassac, 30 m. S.E. of Chandoe. Long Xuyen communicates with the Gulf of Siam by the canal of Rachgia. Pop. (arrondissement) about 95,000.

Lonicera, a genus of hardy and half-hardy shrubs belonging to the order Caprifoliaceæ; characterized by flowers with a small, five-toothed calyx, a five-lobed tubular corolla usually with an irregular limb, five stamens, and a knobbed stigma. The only true British native species is *L. periclymenum*, the common woodbine. Some of the most beautiful are the half-hardy evergreen twiner, *L. sempervirens*, with whorls of scarlet and yellow flowers; *L. tartaria*, with pinkish flowers; *L. caprifolium*, with blue and yellow flowers; and *L. fragrantissima*, with white, richly-scented flowers.

Lonigo (anc. *Leonicum*), tn., prov. Vicenza, Venetia, Italy, on river Gua, 23 m. w. of Padua; has mineral springs. Pop. (comm.) 10,400.

Lonneker, vil., prov. Overijssel, Netherlands, 3 m. N.N.E. of Enschede; has cotton and thread mills. Pop. (1910) 17,577.

Lönnrot, ELIAS (1802-84). Finnish scholar, born at Sammatti, Nyland. He collected and edited the folk-songs of his people—*Kantele* (1829-31), their great epic of *Kalevala* (1835), their lyrical poetry (*Kantelatar*, 1840), and collections of proverbs (*Sanalaskuja*, 1842) and riddles (*Arvoituksia*, 1844; new ed. 1861). He also issued an extensive Finnish-Swedish dictionary (1866-80). See *Life* by Ahlqvist (1885), and FINLAND—*Language and Literature*.

Lons-le-Saunier, tn., cap. of dep. Jura, France, near source of riv. Solman, 35 m. E.S.E. of Chalon-sur-Saône. The town was the birthplace of Rouget de Lisle, author of the *Marseillaise*. Trade in salt, wine, and agricultural produce. Pop. 13,000.

Loo. See GAMBLING.

Loo-choo, LU-CHU, or LIU-KIU ISLANDS (Jap. *Riu-ku*) contain thirty-six principal islands, extending in a north-east to south-west direction from the Gulf of Kagoshima, in S. Japan, to Formosa, between lat. 24° and 30° N., and long. 125° and 130° E. Of these the northern islands have long since fallen under Japanese rule. Loo-choo Proper lies between 26° and 27° N. lat., and consists of nine islands, of which the chief is Great Loo-choo or Okinawa, 56 m. long, and from 2 to 14 m. broad. In this is situated the old capital, Shuri, a few miles inland from the port, Naha or Naba. Unten (Port Melville) is a good harbour on the north-west coast. The islands are partly volcanic, partly of coralline formation, and one (Tri-omote-jima), in the 'Further Isles,' is of limestone, and possesses rich coal mines. In Yaku-no-shima the mountains are over 6,000 ft. high, but elsewhere they seldom exceed 2,000 ft.

At the close of the 14th century the king of Loo-choo recognized Chinese suzerainty, but homage was also paid to Japan. In 1874 China was compelled by Japan to abandon her claims, and in 1876 the islands were incorporated in Japan. The principal products are sugar-cane, sweet potatoes, rice, Indian corn, tobacco, indigo, and various cereals; and the exports include sugar, silk, cotton, and hempen fabrics, lacquer, and earthenware. The written language, manners, wedding and burial customs are distinct from those of Japan and China. Pop. 450,000. See Basil Hall's *Voyage of Discovery to the West Coast of Corea and the Great Loo-choo Islands* (1818); Basil Hall Chamberlain's 'The Loo-choo Islands and their Inhabitants,' in *Geog. Jour.* (1895).

Loofah, a name given to the fibrous part of the fruit of the towel-gourd, *Luffa cylindrica*, order Cucurbitaceæ. It is often used as a bath sponge in this country.

Lookout Mountain. See CHATTANOOGA.

Loom. See COTTON—Manufacture, and WOOLLEN TEXTILES.

Looming, the name applied by nautical men when distant objects appear abnormally elevated above their true positions. See MIRAGE.

Loomis, ELIAS (1811-89), American astronomer and mathematician, studied at Yale. After holding professorships at Hudson, Ohio (1837-44), and in the University of New York (1844-60), he returned to Yale as professor of natural philosophy and astronomy (1860-89). He was the author of numerous scientific works, and also of a genealogical work, *The Descendants of Joseph Loomis*.

Loon, or **LOOM**, a popular term sometimes applied to the great northern diver but also used in

Norfolk for the great crested grebe.

Loón, largest tn., isl. of Bohol, Philippines, on W. coast, 12 m. N. of Tagbilaran. It is picturesquely situated on the side of a hill. The anchorage, is sheltered by a mole 328 yards long. Pop. 18,000.

Loon op Zand, commun., Netherlands, in N. Brabant, 5 m. N. by W. of Tilburg. Pop. (1910) 7,817.

Loosduinen, comm., South Holland, 4 m. S.W. of the Hague. Pop. (1910) 7,258.

Loosestrife. See *LYSIMACHIA* and *LYTHRUM*.

Lope, FELIX DE VEGA CARPIO (1562-1635), Spanish dramatist, born in Madrid, and educated at the Jesuit College there. As a soldier, he fought at the Azores (1582) and in the Armada (1588), serving in several official posts, but all the while writing facile, witty verse. His first known play, *El Verdadero Amante*, was written when he was twelve years old. During the dreadful voyage with the Armada he wrote most of his *Hermosura de Angelica* (11,100 verses), an epic in imitation of the *Orlando Furioso*. Then followed a pastoral prose narrative, *Aradia*, of which fifteen editions appeared in the author's lifetime. In 1598 appeared the famous epic poem on Sir Francis Drake, *Dragonera*, a savage attack on the great seaman who had beaten the naval power of Spain. His sacred poem, *San Isidro*, followed (1599)—one of his best works. Rhymes and sonnets by the hundred were issued during the next two years, and Lope was then acknowledged the first poet in Spain. He then devoted himself for some time to sacred poems, such as *Soliloquios* and *Los Pastores de Belen* (1612). He afterwards became a priest and a 'familiar' of the Inquisition, but never slackened in his marvellous fecundity in every branch of letters.

In drama alone he wrote 1,800 separate plays and 400 *autos* (religious pieces), of which 400 plays and 40 *autos* survive. A large number of the dramas are to be found in the series *Autores Españoles* by Hartzenbusch (1846-80). A complete edition of his *Obras* is in course of publication by the Spanish Academy. See Ticknor's *History of Spanish Literature*, vol. ii. (1849), Von Schack's *Geschichte der Dramatischen Literatur und Kunst in Spanien* (1845-46), Lord Holland's *Life* (1806), and Rennert's *Life* (1904).

Lope de Rueda. See RUEDA.

Lopes, Sir MANASSEH MASSEH (1755-1831), English politician, born in Jamaica, a descendant of a family of Spanish Jews. Lopes settled in England, abandoned Judaism, entered Parliament as member for New Romney (1802), and was made a baronet (1805). In 1819 his election for Barnstaple was petitioned against on the ground of bribery. He was unseated, and the same year was fined £1,000 and sentenced to two years' imprisonment for bribery at a previous election at Grampound. On his release he was returned for his pocket borough of Westbury (1823), but resigned (1826) to provide a seat for Peel, who had been defeated at Oxford.

Lopez, FRANCISCO SOLANO (1827-70), tyrant of Paraguay, was the son of Carlos Antonio Lopez, president of Paraguay. On his father's death he was appointed president. In 1865 he declared war against Brazil and the Argentine Republic, and the war was only closed by the death of Lopez (1870). See Washburn's *History of Paraguay* (1870).

Lophobranchii. See BONY FISHES.

Lop-Nor. See LOB-NOR.

Loquat, the Japanese medlar or quince, is the fruit of a small tree, *Photinia japonica*. The flowers are white, and are borne

in drooping racemes, the edible, ovoid, orange-red fruit appearing in bunches.

Lora del Rio. tn., Spain, in Andalusia, prov. of and 30 m. E.N.E. of Seville. Pop. 7,000.

Lorain, city of Lorain co., Ohio, U.S.A., 30 m. w. of Cleveland, on Lake Erie. It is a great shipbuilding place and a busy manufacturing town. Pop. (1910) 28,883.

Loranthaceæ, an order of parasitic evergreen shrubs, bearing usually small, inconspicuous, whitish flowers, followed by fruits containing a viscid substance often used as birdlime. The mistletoe (*Viscum album*) is the best-known species in Britain.

Lorca, city, prov. Murcia, S.E. Spain, 38 m. s.w. of Murcia. Wine is produced, and there are lead mines in the neighbourhood. Pop. 70,000.

Lord. There are many uses of the word 'lord' in English in the sense of a master, or person possessing or entitled to authority. This appears from such widely different expressions as 'the Lord God,' 'our Lord Jesus Christ,' 'the lord of the manor,' 'her lord and master,' and the common word 'landlord.' But it is only necessary to consider here two uses of the word—first, as meaning a nobleman; and secondly, as an honorary title of certain official persons, used either in addressing them or as part of their designation. In the first sense all peers are lords temporal, and all archbishops and bishops (of the Established Church) are lords spiritual. It is often erroneously said that the lords spiritual and temporal are the archbishops, bishops, and peers who have seats in the House of Lords; but this mistake arises from the fact that Acts of Parliament are expressed as being made 'by and with the advice and consent of the lords spiritual and

temporal and commons in this present Parliament assembled.' There are lords as well as commons who are not in Parliament.

Many holders of high office are called lord as part of their official title, as, for example, the Lords of the Privy Council, of the Treasury, and of the Admiralty, the Lord Chancellor, the Lord Privy Seal, the Lord Chamberlain, the Lord High Steward, and the Lord Advocate; the Lord-Lieutenant of Ireland, and the Lord-Lieutenants of counties, the Lord Chief-Judge, the Lord Justices of Appeal, and the judges of the Court of Session. The judges of the High Court in England are addressed 'My Lord,' but their title is 'Mr. Justice.' The mayors of London, Manchester, Liverpool, Birmingham, York, Cardiff, and Dublin are Lord Mayors; and the provosts of Edinburgh, Glasgow, Aberdeen, Dundee, and Perth are Lord Provosts.

Lord High Steward. See HIGH STEWARD OF ENGLAND.

Lord Howe Islands, group of islands, S. Pacific, between Port Jackson and Norfolk I., 550 m. E. of Sydney, in 31° S. lat. and 159° E. long. They belong administratively to New South Wales. The islands were discovered in 1788, and occupied in 1834. Vegetation is abundant, particularly banyan trees. Area, 5 sq. m. Pop. 100.

Lord-Lieutenant of Ireland. See IRELAND.

Lord-Lieutenants of counties were originally appointed in the reign of Henry VIII. to control the military forces of the crown. They also exercised many of the duties formerly performed by the sheriffs. In 1662 they were given entire control of the militia, but by the Militia Act, 1882, their functions were transferred to the crown. They are usually at the head of the county

associations for the management of the territorial forces. They must appoint twenty duly qualified deputy-lieutenants in each county approved by the crown, three of whom may act for the lord-lieutenant during absence. The lord-lieutenant may also appoint a vice-lieutenant, and he generally recommends county justices to the lord chancellor for appointment. See JUSTICES.

Lord Mayor of London. See LONDON.

Lord Nelson, a British first-class battleship of 16,500 tons and 18 knots, launched at Tyneside in 1906. She carries a primary armament of four 12-inch guns, and a secondary armament of ten 9·2-inch guns.

Lord of the Isles. See ISLES, LORD OF THE.

Lords, House of. See PARLIAMENT.

Lords-and-Ladies. See ARUM.

Lord's Day. See SABBATH.

Lord's Supper. See EUCHARIST.

Loreburn, SIR ROBERT THRESHIE REID, EARL (1846), English jurist and statesman, is a native of Dumfriesshire, and was educated at Cheltenham and at Balliol College, Oxford. Choosing the law as a profession, he became a barrister in 1871, Q.C. 1882, and solicitor-general and later attorney-general, and was knighted (1894). In 1905 he accepted the office of lord chancellor in the Campbell-Bannerman administration, and was made a baron. In 1911 he received an earldom.

Lorelei, or LURLEI, a famous rock on the right bank of the Rhine, near St. Goar, noted for the danger it offered to navigation and for a marvellous echo. From this originated the legend of the siren, a favourite theme of German poets. Heine has a well-

known poem on the subject, but the earliest version is to be found in Brentano's ballad *Zu Bacharach am Rheine wohnt eine Zauberin*, written in 1800. The rock is now pierced by a railway tunnel.

Lorenz, ADOLF (1854), Austrian surgeon, was born in Silesia. After a distinguished career as a student at Vienna University, he graduated in 1880, and subsequently became professor of surgery there. In 1895 Professor Lorenz published a treatise on *Dislocation of the Hip*, and his method of treating congenital dislocation has acquired unenviable prominence through the indiscreet eulogy of the American press. The operation with which his name is associated consists—(1) in forcible rupture of such parts as resist reduction under an anesthetic; and (2) in fixing and retaining the limb in proper position in a plaster case for several months.

Lorenzo Marques. See LORENZO MARQUES.

Loreto. (1.) City, prov. Ancona, the Marches, Italy, 14 m. s.s.e. of Ancona, and about 3 m. from the Adriatic. It owes its origin to a famous chapel of the Virgin, Santa Casa, over which a magnificent church was erected. The shrine is still a famous place of pilgrimage. Pop. 8,000. (2.) Comm., Italy, in Abruzzi e Molise, prov. of and 20 m. s.s.e. of Teramo. Pop. 7,000. (3.) Interior dep., N.E. Peru, bounded on the N. by Ecuador, and E. by Brazil and Bolivia. The principal exports are rubber and salt. Gold is abundant. Area, 288,456 sq. m. Pop. estimated at 100,000. Its capital is Moyobamba, in about 6° s. and 76° 50' E. Pop. 10,000.

Lorica, or SANTA CRUZ DE LORICA, tn. and seapt., Colombia, 100 m. s. by w. of Cartagena, on the Sinu; has active shipping trade. Pop. 11,000.

Lorient, seapt. and fortified naval arsenal, dep. Morbihan, France, on the s. coast of Brittany, at the mouth of Scorff and Blavet Rrs., 30 m. w. by N. of Vannes. The dockyard is used for the construction and equipment of men-of-war, and is one of the finest in France. The imports are mainly shipbuilding materials, iron, and coal; the exports are pit-timber, wheat, wines, sardines. The town was founded in 1670 by the French East India Company, and on the dissolution of the company in 1770 it became a naval station. Pop. 46,700. Off the port in June 1795 the British under Lord Bridport defeated the French under Villaret-Joyeuse. Although the action was really fought off Groix, it is commonly known as the action off Lorient.

Lorimer, JAMES (1818-90), Scottish jurist and author, born at Aberdalgie, Perthshire, was educated at the Universities of Edinburgh, Berlin, and Bonn. In 1865 he became professor of public and international law in Edinburgh (1866), and was one of the founders of the Institute of International Law (1873). His work, *Institutes of the Law of Nations*, was published in 1883-84. See notice by Professor Flint in *The Juridical Review* (April 1890).

Lorimer, JOHN HENRY (1856), Scottish painter, born at Edinburgh. He began to exhibit in Edinburgh (1876), and two years later in London. He was elected R.S.A. in 1900. Among his pictures are *The Ordination of Elders* (now in the Luxembourg), *The Eleventh Hour* (in the Art Gallery, Philadelphia), *Lullabye*, *A Child's Thank-offering*, and *A Portrait of Colonel Anstruther-Thomson* (Luxembourg, Paris).

Loriquets are parrots nearly allied to the lorises, but smaller in size. One of the largest is

Swainson's loriquet (*Trichoglossus Nove-hollandiae*), which inhabits E. Australia.

Loris (probably from Dutch *loeris*, 'a clown'), or SLOW LEMUR, names applied to three Asiatic lemurs. The common loris (*Nycticebus tardigradus*) occurs in the Malay region, and is about the size of a cat, with a broad head, a thick, woolly coat, a very short tail, and large eyes; the thumb and great toe are widely separated from the other digits. The animals are purely nocturnal in habit. A smaller form is the Javan loris (*N. javanicus*). In the related slender loris (*Loris gracilis*) of S. India and Ceylon the eyes are exceptionally large.

Loris-Melikoff, MIKHAIL TARILOVITCH (1826-88), Russian statesman and general, born at Tifia. He was made a count for his brilliant exploits during the Russo-Turkish war (1877-8). Later he so distinguished himself as governor-general of Kharkov (1879) that he was recalled to St. Petersburg to cope with the Nihilist movement (1880). Alexander II. made him minister of the interior. On the Tsar's assassination (1881) he resigned.

Loriti, HEINRICH. See GLAREANUS.

Lörrach, comm., grand-duchy of Baden, Germany, in valley of Wiese, 5 m. N.N.E. of Basel. Manufactures cotton, silk, chocolate, and hardware; trades in wine, fruit, and timber. Pop. (1910) 14,756. See Hochstetter's *Die Stadt Lörrach* (1882).

Lorraine, or LOTHARINGIA. See ALACE-LORRAINE.

Lorraine, CLAUDE. See CLAUDE LORRAINE.

Lorris, GUILLAUME DE (c. 1215-c. 1240), French troubadour, was the author of the first part of the celebrated *Roman de la Rose*. The latter part of the poem was from the pen of Jean de Meung.

Lory, a name given to certain members of the parrot family Loridae, which is confined to the Australasian region. The purple-capped lory (*Lorius domicella*) of Ceram and Amboyna is an example. Like its allies, it is a honey-sucker, and has the tongue furnished with a kind of brush. It is about a foot in length, and is gorgeously coloured. The ground colour is scarlet, with a gold throat band; the wings are blue and green, and the head capped with purplish black.

Los Andes. (1.) A territory of Argentina, consisting of the part of the Puna de Atacama assigned to Argentina by arbitration in 1899. Area, 22,000 sq. m.; pop. 2,300. (2.) Town, Chile, prov. of Aconcagua, 18 m. s.e. of San Felipe. Pop. 6,600.

Los Angeles. (1.) City, California, U.S.A., on Los Angeles R., the co. seat of Los Angeles co., and the second city of the state in population, 350 m. s.e. of San Francisco. It is a beautiful city, having broad, well-paved streets, and detached houses in ample grounds, covered with semi-tropical vegetation. The surrounding country is devoted to the cultivation of fruits, for which irrigation is necessary. Petroleum and gold are obtained in the vicinity. Pop. (1910) city, 319,198; co. 604,131. (2.) Capital, province Bio-Bio, Central Chile, 60 m. s.e. of La Concepcion. Pop. 19,500.

Loschwitz, vil., Saxony, 2 m. e. of Dresden; a health resort. Pop. 6,300.

Los Islands, group of volcanic islands (Factory, Tamara, Ruma), w. coast of Africa, 75 m. N.W. of Freetown, Sierra Leone. They were occupied by the British in 1826, and ceded to France by the Anglo-French Agreement, 1904. Pop. 1,400.

Lesoncz, tn., Hungary, co. Neograd, 63 m. N.N.E. of Buda-

pest; manufactures cloth, glass, and paper. Pop. 10,000.

Loeser, comm., Netherlands, in Overijssel, 37 m. n. of Deventer. Pop. (1910) 10,099.

Lossiemouth, tn., Elginshire, Scotland, on riv. Lossie, 5 m. n. by n. of Elgin. Pop. (1911) 4,207.

Lossing, BENJAMIN JOHN (1813-91), American author, born at Beekman, N.Y., was successively farm-boy, watchmaker, journalist, wood-engraver, artist, and historian. His chief works, illustrated by himself, were *Pictorial Field-book of the Revolution* (1850-52), and *Pictorial History of the Civil War* (1866-9); also *History of New York City* (1884), and *The Empire State* (1887). He likewise wrote biographies of celebrated Americans, and an *Outline History of the Fine Arts* (1840).

Lössnitz, tn., Saxony, 13 m. s.e. of Zwickau. Pop. (1910) 7,355.

Lost Property. Lost property still belongs to the true owner, who may retake possession of it either in the hands of the finder or of some one else to whom it has been sold by the finder. The finder of lost property is entitled to keep it till claimed by the owner; but if he knows who the owner is, or has reasonable grounds for believing that the owner can be found, then if he converts it to his own use, he is guilty of theft. In the common case of finding lost property in the streets, the finder will commit theft if he does not hand the property over to the police. If the police fail to find the owner, they must return the property to the finder, who is entitled as against all but the true owner. See **TREASURE TROVE**.

Lost Tribes, THE. It is a well-authenticated fact that a considerable proportion of the inhabitants of N. Palestine were carried into captivity during the

closing years of the kingdom of Israel. A deportation took place in the reign of Pekah (2 Kings 15:29), and the monuments inform us that no fewer than 27,290 persons were taken to Media and Mesopotamia after the fall of Samaria, 722 B.C. (2 Kings 17:6). The kingdom of Judah was similarly dealt with by Babylon (587 B.C.). But while Scripture narrates the return of the captives of Judah, it is silent regarding the fate of the exiled natives of the northern kingdom, so that the ten tribes comprising it simply disappear from history. Many inquirers have buried themselves with speculations as to what became of the expatriated people. One of the most recent theories is that the 'lost tribes' are none other than the inhabitants of Great Britain and the United States — say the Anglo-Celtic peoples. See *Philo-Israel, An Inquiry establishing the Identity of the British Nation with the Lost Tribes* (5th ed. 1899).

Lostwithiel, munici. bor. and mkt. tn., on the Fowey, Cornwall, England, 5 m. s.s.e. of Bodmin; was one of the four Cornish towns empowered to coin and sell tin. Pop. (1911) 1,373.

Lot. (1.) Department, S.W. France, bounded on the N. by Corrèze, on w. by Dordogne, on s. by Aveyron. The surface is very varied. The river Lot, with its tributary the Célé, and the river Dordogne, drain the department to the Gironde. The river valleys are very fertile, yielding wheat, oats, barley, rye, maize, tobacco, hemp, and fruit. About six per cent of the department is under vineyards. The manufactures include flax-spinning, tanning, and the manufacture of coarse cloths. Area, 2,018 sq. m. Pop. 217,000. (2.) River, France, rises in the mountains of Lzère, and flows w. through the departments of Lzère, Aveyron,

Lot, and Lot-et-Garonne, and falls into the Garonne at Aiguillon. Length, about 300 m., of which 194 are navigable.

Lot, a character of Hebrew patriarchal times, the grandson of Terah, and the nephew of Abraham, with whom his history is largely connected. The two left Haran together, proceeded to Canaan, journeyed to Egypt, returned, and afterwards separated, Lot choosing a settlement near Sodom. While living there Lot was captured by the four kings, but was rescued by Abraham (Gen. 14). Being forewarned of the imminent destruction of Sodom, he escaped with his family—his wife, however, being turned into a pillar of salt as the penalty of looking back. Lot was regarded as the ancestor of the Moabites and Ammonites (Gen. 19).

Lot, or LOTA BAJA, tn., Chile, on the bay of Arauco, prov. of and 3 m. s. of Concepcion; has coal mines and smelting works, and exports copper, peats, leather, and coal. Pop. 5,000.

Lot-et-Garonne, dep., S.W. France, is bounded on the N. by Dordogne, on s. by Gers, on w. by Gironde, and on the E. by Tarn-et-Garonne. The department is traversed from s.e. to n.w. by the Garonne, and from E. to W. by the Lot, a tributary of the Garonne. The department is formed mainly of parts of Guienne and Gascony, and is very fertile. The soil is highly cultivated, and grapes, wheat, maize, barley, potatoes, tobacco, hemp, and plums are grown. Iron deposits are numerous. There are four arrondissements—Agen (cap.), Marmande, Nérac, and Villeneuve-sur-Lot. Area, 2,078 sq. m. Pop. 275,000.

Lothaire I. (795-855), emperor of the Holy Roman empire, eldest son of Louis the Pious, on whose death (840) he claimed the

title. He gave his name to Lotharingia (Lorraine).

Lothaire II., THE SAXON (1075-1137), emperor of the Holy Roman empire, became duke of Saxony through his wife, and king of Germany by election. See Bryce's *Holy Roman Empire*.

Lothians, THE, dist. of Scotland, includes the counties of Haddington, Edinburgh, and Linlithgow, named respectively East, Mid, and West Lothian. From 547 to 1018 the district formed part of the kingdom of Northumbria.

Lothringen. See ALSACE-LORRAINE.

Loti, PIERRE, pseudonym of LOUIS MARIE JULIEN VIAUD (1850), French novelist, born at Rochefort; entered the French navy (1867), and became lieutenant (1881), and is now captain. In 1879 he produced his first tale, *Aziyadé*, a story of the Bosphorus; and in rapid succession followed *Le Mariage de Loti* (1880); *Le Roman d'un Spahi* (1881), a powerful study of a soldier in Africa; *Mon Frère Yves* (1883); *Le Pêcheur d'Islande* (1886), the most popular of his books; *Madame Chrysanthème* (1887); *Propos d'Exil* (1887); *Japonneries d'Automne* (1889); *Le Roman d'un Enfant* (1890); *Le Livre de la Petit et de la Mort* (1891); *Fantôme d'Orient* (1892); *Le Désert* (1894); *La Galilée* (1895); *Ramuntcho* (1897); *L'Inde sous les Anglais* (1903); *Vers Isphahan* (1904); *La Troisième Jeunesse de Mme. Prune* (1905); *Les Désenchantées. Roman des Harems Turcs Contemporains* (1906). His books are lacking in much that goes to make good fiction, but as an impressionist he is eminently successful. Pierre Loti was admitted to the French Academy in 1891.

Lotophagi, or LOTUS-EATERS, in ancient Greek legend, a people met with by Odysseus in his

wanderings. They ate the fruit and drank the juice of a plant which had the property of causing a man to lose all desire to return to his own land. In historical times the Greeks became acquainted with tribes on the north coast of Africa, near the Syrtis Minor, whose chief food was a plant which they called the lotus; and they therefore placed the Lotophagi of the *Odyssey* on that coast. See Tennyson's *Lotos-eaters*.

Lots. CASTING, a mode of divination practised by many ancient peoples. It was used extensively among the Hebrews, though we do not know the means employed, and was regarded as a legitimate mode of ascertaining the Divine will. Thus, it was used to discover a criminal—e.g. Achan (Josh. 7:14), Jonah (1:7); or the right man for an office—e.g. Saul (1 Sam. 10:20 f.), Matthias (Acts 1:26). The division of territory among the tribes was also determined by casting lots (Num. 33:54), whence the use of the term lot to indicate a possession, both literally and figuratively (Josh. 15:1; Ps. 16:5); likewise the choice between the goat offered to Jehovah and the so-called scapegoat. See AZAZEL, URIM AND THUMMIM, and Benzing's *Hebraische Archäologie*.

Lötschberg Tunnel, a trans-alpine railway tunnel extending from Kandersteg in the Bernese Oberland to Goppenstein, 17½ m. from Brigue. Its length is slightly over 9½ m., and it thus ranks third among the great Alpine tunnels. The boring was accomplished on March 31, 1911, after four and a half years' work.

Lottery. A lottery, or 'a distribution of prizes by lot or chance,' although at one time permissible, is now rendered illegal by a great number of acts from 1698 onwards, the most important of them being the

Gaming Act, 1802. Both those who keep lotteries and those who subscribe to them are liable to penalties, the former being also liable to conviction as 'rogues and vagabonds.' It is immaterial whether the lottery is of a public or private character, or whether its object is purely charitable or otherwise. Thus, a club sweep-stake and a church raffle are both illegal, as being contrary to the Lottery Acts. The so-called 'missing word' competitions have also been held to be illegal. See also ART UNION.

Lotto, LORENZO (c. 1480–c. 1556), Italian painter, born at Venice. Among his paintings, which are practically all concerned with religious subjects, are the *Betrothal of St. Catherine*, now at Munich; *Christ's Farewell to his Mother*, in the museum at Berlin; and a *Holy Family*, in the Uffizi Gallery at Florence. See Berenson's *Lorenzo Lotto* (ed. 1905).

Lotus, a genus of plants of the order Leguminosæ. Most of the species have four or five foliate leaves, and produce their flowers in umbels or axillary peduncles. The calyx has usually five equal teeth, and the fruit is a many-seeded cylindrical legume. The two common British species are *L. major* (the greater bird's-foot trefoil) and *L. corniculatus* (the common bird's-foot trefoil), both with brilliant yellow flowers in umbels, and common meadow plants. Among the garden species are *L. australis*, a greenhouse pink-flowering plant about two feet in height; *L. jacobaeus*, also a greenhouse plant, from the Cape Verde Is., bearing dark purple flowers; and *L. peliorhynchos*, a greenhouse shrub, with scarlet flowers.

Lotze, RUDOLF HERMANN (1817–81), whose name is perhaps the most important in philosophy since Hegel, was born at Bautzen in Saxony; educated at the Gym-

nasium in Zittau and the University of Leipzig, his course of studies included medicine as well as philosophy. He was appointed to a professorship at Leipzig (1842), then called to Göttingen (1844) as successor to Herbart, which post he left (1881) to occupy a similar chair in Berlin, where he died soon after entering upon his duties. On the subjects to which his studies were mainly devoted—medicine or biology and philosophy—he wrote largely. The great problem which lies on the border line between them, that of the relations of body and mind, forms the theme of his best-known work on the former subject, his *Medizinische Psychologie* (1852). His chief philosophical writings are of later date. The most comprehensive of them is the *Mikrokosmos* (1856-64), in which his whole system of thought was set forth in a more popular form than that of his academic treatises. He began a more formal exposition of his 'system of philosophy' with a work on *Logik* (1874), followed by a second work on *Metaphysik* (1879). The third part, which was to have dealt with ethics, aesthetics, and philosophy of religion, was never finished. He also wrote for a series of histories of the sciences a volume entitled *Geschichte der Ästhetik in Deutschland* (1868), in which his views on art are embodied.

Lotze's philosophy was a reaction against the unduly abstract and logical character of Hegelian idealism, which seemed to sacrifice all the warmth of individual life and feeling, all the peculiar value of concrete processes and things, to the rigid and formal evolution of a great conceptual scheme. Lotze insists on the worth of personality, on the place of feeling, or, in general, on the superiority of content to mere form. An excellent short

account of Lotze is contained in a paper in Wallace's *Lectures and Essays on Natural Theology* (1898); Jones's *Philosophy of Lotze* (1895) is the first part of an academic criticism. See also Hartmann's *Lotze's Philosophie* (1888), and Vorbrot's *Prinzipien der Ethik und Religionsphilosophie Lotzes* (1891).

Lötzen, tn., East Prussia, 70 m. s.e. of Königsberg. Pop. (1910) 6,982.

Loubet, EMILE (1838), French statesman, born in the village of Marsanne (dep. Drôme); studied as a lawyer in Paris, and joined the bar at Montélimar, of which town he was elected mayor (1870). He was returned to the Chamber of Deputies as member for Montélimar (1876); joined the Tirard cabinet as minister for public works (1887); and entered the Senate (1885), of which he was chosen president (1895), and again in 1898. In the interval he had been chairman of the finance committee in the Senate (1890), prime minister (1892), and chairman of the customs committee (1893). In 1899 he was elected president of the French republic, in succession to M. Faure. M. Fallières succeeded him in 1906. M. Loubet succeeded in bringing about a more friendly feeling between France and Britain than had existed for several generations. See Avenel's *Le Président Emile Loubet et ses Prédecesseurs* (1903).

Loudon, GIDEON ERNEST. See LAUDON.

Loudon, JOHN CLAUDIUS (1783-1843), Scottish landscape gardener and horticultural writer, born at Cambuslang in Lanarkshire. He made a thorough study of various methods of agriculture and horticulture, British and European, and embodied the results in the *Encyclopædia of Gardening* (1822), *Encyclopædia of Agriculture* (1826), and *Encyclopædia of*

Plants (1829). Loudon's chief work, the *Arboretum et Fruticetum Britannicum*, was a financial failure, involving him in heavy debt. See Life prefaced to his *Self-Instruction for Gardeners* (1844).

Loughborough, munic. bor. in Leicestershire, England, on l. bk. of the Soar, 10 m. N.N.W. of Leicester. Manufactures hosiery, locomotives, machinery, trams, and electric plant. Pop. (1911) 22,992. See Dimock Fletcher's *Historical Handbook to Loughborough* (1881), and his *Parish Register of Loughborough* (1873).

Loughrea, m.rkt. tn., Co. Galway, Ireland, 10 m. S.E. of Athlone. Pop. 2,500.

Loughton, par. and small tn., Essex, England, on the E. side of Epping Forest, 12 m. N.E. of London. Pop. (1911) 5,433.

Louis. See **LUDWIG**.

Louis IX. (1215-70), king of France, better known as Saint Louis, came to the throne in 1226. Louis IX.'s government was wise and successful; he secured the submission of Aquitaine and Toulouse, and added Provence to France. His heart, however, was set on a crusade, and he refused to involve himself in the quarrel between Pope and Emperor which was raging. In 1248 he embarked on the crusade, which, however, came to grief in Egypt, where Louis was defeated at Mansourah, and himself fell into the hands of the enemy (1250). After his release he spent four years in the Holy Land, but returned to France (1254). In 1259 a settlement of the claims of England in France was made (Treaty of Paris). In 1264 he was called upon to arbitrate between Henry III. and the English barons (*Dix d'Amiens*). In 1270 he embarked on his second crusade; and landed at Carthage, where he fell a victim to the plague. He was at once pious and gay, brave and kind; and proved himself a wise

administrator at home. See Joinville's *Histoire de Saint Louis* (1874), and Perry's *Saint Louis* (1901).

Louis XI. (1423-83), king of France, the eldest son of Charles VII., was born at Bourges. He raised France from the degradation of the Hundred Years war, and gave to the government the unity and vigour that the times required. In 1465 Louis was confronted with a feudal rebellion—the League of the Public Weal—of which Charles the Bold, afterwards Duke of Burgundy, was ringleader. Louis profited by Burgundy's humiliation at the hands of the Swiss (1476). In his internal administration he made great use of the new ideas of Roman law which were fast coming into vogue. He has been called the first of modern statesmen, and may be compared to his younger contemporary, Henry VII. of England. See Michelet's *Louis XI. et Charles le Téméraire* (1853), Legeay's *Histoire de Louis XI.* (1874), Willert's *The Reign of Louis XI.* (1876), Philippe de Comines's *Mémoires* (1674), and *Lettres de Louis XI.*, ed. Société de l'Hist. de France (in progress).

Louis XIII. (1601-43), king of France, son of Henry IV., ascended the throne at the age of nine; married (1615) Anne of Austria. His reign was at first completely dominated by his mother, Marie de' Medici, and her favourite, Concini. But in 1617 the king, prompted by his favourite, Luynes, had Concini assassinated and the queen-mother exiled. Richelieu became minister in 1624, and the chief events of the reign will be found under his name. See Malingre's *Histoire de Louis XIII.* (1646), Basin's *Histoire de France sous Louis XIII.* (1887), Zeller's *Etudes critiques sur le Régne de Louis XIII.* (1879-80). Ratiff... .

Louis XIII. (1903); and Perkins's *Richelieu and the Growth of French Power* (1900).

Louis XIV. (1638-1715), king of France, son of Louis XIII. His reign, which saw the French monarchy reach and pass its zenith, falls into three periods:—(1.) 1643-61—i.e. to the fall of Mazarin. During this period he reigned but did not rule (see MAZARIN). (2.) 1661-84. In 1661 Louis took up the reins of government, and Colbert began his great efforts at reform, which were thwarted by Louis's ambitions (see COBERT). At the same time the bureaucratic machinery of central government was rearranged, and the monarchy became more absolute than ever. Then France became involved in a long series of wars. The war of Devolution (1667-8), in which France fought Spain for the Low Countries, and was thwarted by the intervention of the maritime powers in the Triple Alliance (1668), ended in the Peace of Aix-la-Chapelle. This was followed by the Dutch war (1672-8), which ended in the Peace of Nimeguen. Spain renewed the war in 1682, but made peace at Ratisbon. This marks the turning-point of Louis's fortunes. (3.) 1684-1715. The period of decline, when Louis, though wonderfully successful in Europe in spite of reverses, lost the chance of colonial empire. The king married Mme. de Maintenon (probably in January 1684), and under her influence revoked the Edict of Nantes (1685). This attempt to 'dragoon' the nation into uniformity was the greatest blunder of the reign. In 1688 began the 'war of the League of Augsburg,' in which Louis was confronted with the 'Triple Alliance'—i.e. with practically all Europe, excluding the Baltic powers. It ended in the Peace of Ryswick (1697). In 1700 the war of the Spanish Succession broke

out, in which Louis fought to secure the crown of Spain for his grandson. It is famous for the great campaigns of Marlborough and Eugène, and from the military point of view was disastrous to the French. Louis, however, obtained wonderfully favourable terms in the Peace of Utrecht (1713); but he had thrown away the internal prosperity of his country, and all share of the spoils of the New World and chance of colonial empire. See Voltaire's *Siecle de Louis XIV.* (1751), Jame's *The Life and Times of Louis XIV.* (1838), Chotard's *Louis XIV.* (1890), Saint-Amand's *La Cour de Louis XIV.* (Eng. trans. 1894), Hassall's *Louis XIV. and the Zenith of the French Monarchy* (1895), Pardon's *Louis XIV.* (1902), Haggard's *Louis XIV. in Court and Camp* (1904), and Barine's *Louis XIV. et La Grande Mademoiselle* (1905).

Louis XV. (1710-74), king of France, the great-grandson of his predecessor, Louis XIV., was brought to the throne by a series of deaths in the royal family which were by lying rumour attributed to the Duke of Orleans, who became regent. After the death of Orleans the chief minister was Fleury, and he ruled France in the king's name down to his death, in 1743.

Louis XV., except during a few years after his majority, was indolent, sensual, and suspicious, without any sense of duty or talent for affairs. He was ruled by his mistresses, of whom the most famous were Madame de Pompadour and Madame du Barry. Abroad, France engaged in two great wars. The war of the Austrian Succession (1741-8) brought some striking successes to the French arms; but in the Seven Years' war (1756-63) which followed, France was crushingly defeated by Frederick the

Great, and lost to England both Canada and India. At home, meanwhile, a vigorous opposition was rising up. The Parliament of Paris resisted the taxation edicts of the king; the church suffered a severe blow in the suppression of the Jesuit order (1764); the whole tone of literature was becoming revolutionary, and the corruption and extravagance of the reign did much to provoke the great outbreak of the revolution. See Voltaire's *Histoire du Siècle de Louis XV.* (1768-70), Carlyle's *French Revolution* (1837), Carré's *La France sous Louis XV.* (1891), Saint-Amand's *La Cour de Louis XV.* (1894; Eng. trans.), Perkins's *France under Louis XV.* (1897), and Haggard's *The Real Louis the Fifteenth* (1906).

Louis XVI. (1754-93), king of France, grandson of Louis XV., came to the throne in 1774. His first act was to appoint a reforming ministry, containing Malesherbes, Vergennes, and the great Turgot. The incidents of Turgot's ministry will be found under TURGOT. He was dismissed in 1776, and was succeeded by Necker, Calonne, and Loménie de Brienne in turn. Further attempts at reform were made by the two former. In 1778 France entered into the war between America and England, and it was largely her assistance that gained for America independence in 1783. To meet the financial strain and override the factious opposition of the Parliament, which fought hard for the maintenance of privilege and exemption, an Assembly of Notables was called (1787), and it was the failure of the Notables which made the summoning of the Estates-General necessary.

Necker was recalled, but neither he nor Louis realized that the time had come for constitutional as well as financial reform; and

to this lack of policy may be attributed the disasters of 1789.

In October 1789 the royal family was brought by the mob to Paris, whence they escaped in June 1791, only to be stopped at Varennes and brought back. In September 1791 Louis accepted a new constitution, but he was by this time hopelessly alienated from the government of the day, and was looking for foreign intervention as the only means of salvation. This provoked the invasion of the Tuileries on June 20, 1792, and the storming of that palace on August 10. The monarchy was immediately afterwards suspended, and the Convention was called together. The abolition of the monarchy was not deemed sufficient. The king was brought to trial, found guilty of a conspiracy against the nation, and guillotined on Jan. 21, 1793. Louis was a weak, stupid, well-meaning man, utterly unsuited, by his lethargy and want of dignity, to rule over the French, who love of all things a 'roi à cheval.' He was the victim of inherited characteristics. See Drouz's *Histoire du Règne de Louis XVI.* (1839-42); Thiers's *Histoire de la Révolution Française* (1824-27); Jober's *La France sous Louis XVI.* (1877-93); Nicolardot's *Journal de Louis XVI.* (1873); Sourian's *Louis XVI. et la Révolution* (1893).

Louis XVII. (LOUIS CHARLES) (1785-95), titular king of France, was the second son of Louis XVI. He never reigned, and died a prisoner in the Temple. The obscurity of his fate allowed various impostors to lay claim to his inheritance; but the facts of his death seem beyond doubt. See Stevens's *The Lost Dauphin* (1887), Evans's *The Story of Louis XVII.* (1893), and Weldon's *Louis XVII. of France* (1896).

Louis XVIII. (1755-1824), king of France, brother of Louis XVI. He played an obscure part during

the latter's reign; emigrated, and remained in exile till 1814, when he was proclaimed king. His reactionary measures did much to prepare the ground for Napoleon's ill-fated attempt of 1815. He was again restored after Waterloo, and played an exceedingly difficult part with considerable ability. Amidst the intricacies of party politics, he accomplished much excellent work for France. The evacuation of her territory was effected, and the country enjoyed a high degree of prosperity. See De Beauchamp's *Vie de Louis XVIII.* (1825), Saint-Amand's *La Cour de Louis XVIII.* (1891), Daudet's *Louis XVIII. and Décazez*, and Mary Saunders's *Life of Louis XVIII.* (1910).

Louis, SIR THOMAS (1759-1807). British admiral, served in Keppel's action off Ushant (1778), in the first battle of Cape St. Vincent (1780), and commanded the *Mino-taur* (74 guns) at the battle of the Nile (1798). For his services as second in command under Duckworth at San Domingo (1806) he was made a baronet. In 1807 he took part in the operations in the Dardanelles, but died three months later on board his flagship *Canopus*, off Alexandria.

Louisburg, tn., Atlantic coast, Cape Breton I., Canada. It commands the entrance to the Gulf of St. Lawrence. While the island of Cape Breton remained French, Louisburg was an important seaport and fortress, but is now little more than a fishing village. Wolfe took the town and fort before he advanced to the capture of Quebec (1758). Louisburg has a magnificent harbour, which is never frozen over, and is utilized for the winter export of coal. Pop. 1,800. See *Louisbourg in 1745* (Eng. trans by Professor Wrong), and Bourinot's *Memorials of the Island of Cape Breton* (1892).

Louis-d'Or, a French gold coin, first struck by Louis XIII. (1640),

and used continuously till 1795. Its value varied from 10 francs (1640) to 24 francs (1787).

Louise, CAROLINE ALBERTA, PRINCESS (1848), Duchess of Argyll, the fourth daughter of Queen Victoria, married (1871) the Marquis of Lorne, now ninth Duke of Argyll.

Louise, QUEEN OF PRUSSIA. See *LUISE*.

Louisiade Archipelago, group of islands, Oceania, at the south-eastern extremity of Papua (British New Guinea). The largest islands of the group are St. Aignan and Southeast. Alluvial gold has been found, but reef-mining has not been developed to any extent. The islands were discovered by Torres in 1606, and taken by the British in 1888. The inhabitants are of Papuan and Malayan type.

Louisiana, one of the south central states of the United States of America, bordering on the Gulf of Mexico, with an area of 48,700 sq. m. It was admitted to the union as a state (1812), having been formed from the Louisiana territory purchased from France (1803). The surface is low, rarely exceeding 300 ft. above sea-level in the highest northern part, and gradually descending to sea-level. Much of its area consists of alluvial and marsh lands, lying along Red R. and the Mississippi, with its distributaries. Except where cleared for cultivation, the state is covered with forests, consisting mainly of pine on the uplands and cypress in the swamps. Rock salt, sulphur, clay beds, and petroleum are the principal mineral products. The capital is Baton Rouge, and the chief city and port is New Orleans. Farming is the leading industry of the state. The cultivated area (1900) was sixteen per cent. of the total area of the state. The principal crops are cotton, Indian corn, sugar (in the s.e. of the state),

and rice. The manufacturers of Louisiana are largely concentrated in the city of New Orleans. Chief products: refined sugar, lumber, cotton-seed oil and cake, coarse paper, and burlap bags. There are 4,800 miles of railway. Pop. (1910) 1,656,388.

See Johnson's *Highways and Byways of the Mississippi Valley* (1906), and Phelps' *Louisiana* in American Commonwealth Series.

Louis Philippe (1773-1850), king of the French, the son of Philippe 'Egalité.' (See ORLEANS, DUKE OF.) As colonel in the revolutionary army he fought at Valmy and Jemappes. But in 1793 he left the army, and visited England and the United States. He returned to France in 1814, and under Louis XVIII. and Charles X. was regarded as the figurehead of the Liberal party. Upon the abdication of Charles X. he was made lieutenant-general of the kingdom, and a week later 'king of the French.' He took the oath to the new charter, and prepared to govern on liberal lines. But in 1835, after the attempt of Fieschi on his life, the laws of September were passed, controlling the press and the methods of political trials. From 1836 to 1840 the plots and intrigues of Napoleon caused much disquiet, and the revival of the 'Napoleonic legend' was enhanced by the transference of Napoleon I's remains from St. Helena to Paris (1840), and was a heavy blow to the stability of Louis Philippe's essentially commercial and bourgeois régime. In 1843 the radical socialist party was founded by Louis Blanc, and thus the government of Louis Philippe was attacked from two sides. In 1847 the extension of the franchise was demanded from many sides, and in 1848 long-prepared forces broke out into revolution. The king therupon abdicated and fled

to England. See Wright's *The Life and Times of Louis Philippe* (1841), Dumas's *Histoire de la Vie Politique et Privée de Louis Philippe* (1852), Rouvion's *Histoire du Règne de Louis Philippe* (1861), and *Letters of Queen Victoria* (1907).

Louisville, largest city of Kentucky, U.S.A., and the co. seat of Jefferson co., 100 m. S.W. of Cincinnati and on the Ohio, at the falls. It is one of the greatest railway centres s. of the Ohio R., and an important river port. The immense water-power furnished by the falls makes Louisville one of the great manufacturing cities of the south. It is the largest manufacturer and exporter of tobacco in the world. The principal products besides tobacco are packed meats, cotton-seed oil and cake. Louisville was founded in 1780, and named in honour of Louis XVI. of France. Pop. (1910) 223,928. See Johnston's *Memorial History of Louisville* (1896), and Powell's *Historic Towns of the Southern States* (1900).

Loulé, tn., Portugal, in Algarve, 10 m. N.N.W. of Faro; trades in palms and esparto grass, and manufactures porcelain and leather. There are copper mines in the vicinity. Pop. 23,000.

Louping-ill. See SHEEP-Diseases of.

Lourdes, tn., dep. Hautes-Pyrénées, France, on r. bk. of Gave de Pau, 22 m. S.E. of Pau; is one of the chief places of Catholic pilgrimage. Its fame dates from 1858, when the Virgin Mary is reported to have appeared to a girl of thirteen, Bernadette Soubirous. The famous spring rising from the spot is credited with miraculous powers, and a church was built in 1889 for the accommodation of pilgrims, of whom about 500,000 visit the place annually. Pop. 8,300.

Zola's *Lourdes* (1894), and Gué's *Histoire de Notre Dame de Lourdes* (1896).

Lourenço or Lorenzo Marques. (1.) Most southerly of the three districts of Portuguese East Africa. Watered by the Lundé and Limpopo, it comprises five sub-districts, including the rich gold-yielding territory of Manica. (2.) Capital of above district, at the mouth of the Espírito Santo, or English R., in the N.W. of Delagoa Bay; was founded (1544) as a Portuguese factory. A railway runs 57 m. within the colony, and thence 290 m. of line to Pretoria, giving a railway route to Johannesburg 80 m. shorter than that from Durban. There is also a line from this port to the Swaziland border. Imports (1910), £853,627; exports, chiefly beans, nuts, and hides, £419,523, of which £344,062 were for bullion and specie; transit trade, £6,569,306. Pop. 9,900 (including 4,700 whites).

Louse. See LICE.

Lousewort. See PEDICULARIS.

Louth. (1.) Maritime co., Leinster, the smallest in Ireland, lying between Carlingford Lough and the mouth of the Boyne. The surface is low and undulating in the south and the centre, and mountainous on the border of Carlingford Lough. The rivers include Boyne (on s. border), Dee, Glyde, and others flowing to the Irish Sea. Agriculture is the principal employment; Carlingford Bay is famous for oysters; and linen is manufactured. The county comprises six baronies, and returns two members to Parliament. The principal towns are Dundalk, the county town, Drogheda, and Ardee. Area, 316 sq. m. Pop. (1911) 63,402. (2.) Munis. bor. and mrkt. tn., Lindsey division, Lincolnshire, England, 15 m. s. by z. of Grimsby. It is chiefly an agricultural centre, with iron-founding, manufacture

of agricultural implements, and other industries. The Louth navigation canal (constructed 18th century) connects with the Humber. Pop. (1911) 9,883.

Louvain, or LÖWEN, tn., Belgium, prov. Brabant, 18 m. E. by N. of Brussels. It is famous for its university, founded in 1428, now attended by some 1,700 students. Manufactures beer, lace, starch, and tobacco. Pop. 42,000. See Van der Linden's *Histoire de Louvain* (1892).

Louvière, LA, coal-mining centre of Belgium, prov. Hainaut, 13 m. E. by N. of Mons. Pop. 20,000.

Louviers, tn., dep. Eure, France, on riv. Eure, 17 m. s. by E. of Rouen. Manufactures cloth, machinery, and leather. Pop. 10,300.

Louvois, FRANÇOIS MICHEL LE TELLIER, MARQUIS DE (1641-91), war minister under Louis XIV., was the first to organize a standing army for France. He established the Hôtel des Invalides in Paris (1674). See Roussel's *L'Histoire de Louvois* (ed. 1891).

Louvre, or LOUVER (Fr. *l'ouvert*, 'the opening'), an ornamental outlet for smoke on the roof of a building, usually in the shape of a turret or a lantern. Louvres are now generally used for ventilation.

Louvre, THE, a magnificent pile of buildings facing the Seine in Paris; formerly a royal palace, now a museum of art treasures, has been known under its present name since the time of Philippe-Auguste (1204). Succeeding kings of France made additions and reconstructions. Two of the existing façades were the work of Pierre Lescot, the architect of Francis I., while the eastern wing was designed by Claude Perrault for Louis XIV. The revolution of 1789 found the palace still unfinished, the republican government (1793) converting it into a

national museum, while Napoleon continued their work of reconstruction. Not till after the revolution of 1848 was the building completed and connected with the Tuilleries. In 1900 two new galleries were added, and it is now the most extensive museum in Europe, containing the richest collection of pictures, statuary, antiquities, gems, and other objects of art in the world. See Potter's *The Art of the Louvre* (1904).

Lovage (*Ligusticum scoticum*) is a perennial herbaceous plant, order Umbelliferae, and native to Britain. It bears pinkish-white flowers in umbels of many rays and pinnately-divided leaves.

Lovat, SIMON FRASER, TWELFTH LORD (?1667 - 1747), Scottish Jacobite, was descended from a Norman family, one of whom obtained the fort of Lovat, Inverness-shire. By the will of his cousin, the tenth Lord Lovat (who died in 1696), the Lovat estates were made over to Fraser — his father, who had a life rent of them, assuming the title of Lord Lovat, and Fraser himself that of Master of Lovat. As Emilia, daughter of the tenth lord by Lady Amelia Murray, only daughter of the first Marquis of Atholl, claimed the honours, Fraser planned to carry her off and marry her; and failing accidentally in this, he seized her mother instead, and compelled her to submit to a marriage ceremony. For this he and his father were condemned to be executed (1698), but they eluded capture; and in 1700, Fraser, who now, his father being dead, claimed to be Lord Lovat, endeavoured to secure a pardon from King William. He obtained indemnity for his political offences, but for his outrage on the Dowager Lady Lovat he was outlawed (Feb. 17, 1701). Compelled to flee to France, he there

endeavoured to win the confidence of the Jacobites by becoming a convert to Catholicism. At the request of the clan he resolved to return home (1713). Though arrested in London, he was liberated on heavy bail, and, by siding with the government in the '15, secured full pardon and also the life rent of his estates. In 1730 his claims to the Lovat dignities and honours were sanctioned by the Court of Session; and in 1733, Mackenzie, the husband of the Lovat heiress, resigned his claims to the honours and estates for a sum of money. Becoming incautious in his intrigues with the Jacobites, he was deprived by the government of all his official dignities. Vengeance, therefore, made him eager for the success of the 'Young Chevalier' in 1745. After Culloden he sought concealment, but was taken prisoner, brought to London, and after a trial by his peers condemned and beheaded on Tower Hill. See Lovat's *Memoirs* (1797), Hill Burton's *Life of Simon, Lord Lovat* (1847), Fraser's *Chiefs of Grant* (1883), *Major Fraser's Manuscript* (edit. by Fergusson, 1888), and Mackenzie's *Lord Lovat* (1908).

Lovat, SIMON JOSEPH FRASER, SIXTEENTH BARON (1871), Scottish soldier, was a lieutenant in the 1st Life Guards from 1893 to 1897. In the early stages of the Boer war (1899-1902) the War Office accepted his offer to raise a corps of scouts, composed of Scottish gillies, for service in S. Africa, designated 'Lovat's Scouts,' with Lord Lovat in command. They remained in the field until the close of the war, and their services were favourably reported upon both by Earl Roberts and Viscount Kitchener. Lord Lovat was mentioned in dispatches, and received the D.S.O. (1900) and was made a C.B. (1902) for his services, and subse-

quently a c.v.o. Lovat's Scouts now form the 5th company of the Imperial Yeomanry.

Love. Love in its most characteristic forms is the concentration of tender feeling on a person, and in the love of the sexes. Of the emotion as a mental state, distinguishable elements are: desire for presence of the person loved, and pleasure in such presence; depression at parting; longing for and focusing of whole imagination on the memory of the absent one. In the case of maternal love most of these features are pronounced; in love of the sexes they normally accompany the establishment of sexual maturity. This is the period of ideals, and is characterized by an enormous expansion of emotional and intellectual interests. From the evolution standpoint, the tender emotion accords generally with Darwin's theory. (See EMOTIONS.) All the emotional preliminaries of mating—love and courtship—have analogues in the lower animal world, and it is easy to assign selection value to most of them; but the full explanation of love for one only person is yet to seek. The concrete psychology of love is best studied in the great poets and novelists of all nations. See Bain's *The Emotions and the Will* (1859), and *Mental and Moral Science* (1868); Höffding's *Die Psychologie in Umrissen* (1892); Mercier's *Sanity and Insanity* (1890); Krafft-Ebing's *Psychopathia Sexualis* (new Eng. trans. 1899); and Darwin's *Descent of Man* (1871).

Love-bird, a name applied to small parrots belonging to two different genera. The true love-birds (genus *Agapornis*) are inhabitants of Africa, while the green love-birds of the genus *Pittaacula* inhabit South and Central America. The members of both genera are remarkable for

the great affection which appears to exist between males and females. Examples of African love-birds are *Agapornis roseicollis* of S. Africa and *A. cana* of Madagascar.

Lovedale, an educational and mission station, Cape of Good Hope, 30 m. w. by n. of King William's Town. Founded by Scottish missionaries in 1841, it is supported by the United Free Church of Scotland.

Love-feasts. See AGAPE.

Love-in-a-mist, **FENNEL FLOWER**, and **DEVIL-IN-THE-BUSH** are names given to certain species belonging to the genus *Nigella*, a subdivision of the Ranunculaceæ. They are hardy annual plants, chiefly natives of the south of Europe. The flowers are mostly blue or white in colour, and are surrounded by mossy involucres, which seem to envelop the flowers in mist. See NIGELLA.

Love-in-idleness, one of the old English popular names of the pansy or heartsease (*Viola tricolor*).

Loveira, or LOBEIRA, VASCO DE. See AMADIS OF GAUL.

Lovelace, RICHARD (1618-58). English poet and Cavalier, came of a good English family who held the manor of Betherden, in Kent, and he was educated at Charterhouse and at Gloucester Hall, Oxford, where he wrote a comedy, *The Scholar*, and a tragedy, *The Soldier*, both lost. He shone at court, but preferred warfare. In 1646 he took arms on behalf of the king; and in 1646 he was fighting for France against Spain, and was wounded at Dunkirk. On his return he was imprisoned at Aldersgate, and occupied his captivity with preparing his poems for the press. His *Lucasta* (1649) was probably Lucy Sacheverell, who is said to have married another on a false report of his death at Dunkirk. His brother published *Posthumous Poems*.

of Richard Lovelace (1659); an edition by Hazlitt, *Collected Poems*, appeared in 1864; and another in 1904.

Love-lies-bleeding, a popular name for the flowering plant *Amaranthus caudatus*, belonging to the order Amaranthaceæ. It is a common annual garden plant.

Lovell, ROBERT (?1770-96), English poet, was the friend of Southey and Coleridge, and a participant in their 'pantropical' project; but Lovell's early death prevented its realization. In 1794-5 Southey and he published *Poems by Bion and Moschus*, showing the democratic feeling and love of nature common to the Lake school of poetry.

Lover, SAMUEL (1797-1868), Irish novelist, ballad-writer, and painter, born and educated in Dublin; at first devoted himself chiefly to painting, becoming (1828) a member of the Royal Hibernian Academy. From 1835 he was a popular miniature painter in London, and at the same time made successful efforts in literature, his well-known song *Rory O'More* being written in 1824. Several plays, some novels—especially *Handy Andy* (1842)—and numerous songs, including *The Angel's Whisper*, followed in quick succession. See Bernard's *Life of Samuel Lover* (1874), and Symington's *Samuel Lover: a Sketch* (1880).

Lovetch, or LOVATZ, tn., Bulgaria, 70 m. E.N.E. of Sofia. Pop. 7,000.

Low, SIR ROBERT CUNLIFFE (1838-1911), British general, was born in Fifeshire; entered the Indian army (1856), and served with distinction in India, Afghanistan, Burma, and throughout the Indian mutiny. He was director of transport in the Afghan war of 1879-80. During the Burmese war of 1886-8 he had command of a brigade, and for his services received a C.C.B. One of Low's

most successful commands was that of the Chitral relief force in 1895, for which he was awarded a G.C.B., and promoted to the rank of lieutenant-general. He was keeper of the crown jewels from 1909 till his death.

Low, SETH (1850), American politician, was born in Brooklyn, and graduated at Columbia University. He was mayor of Brooklyn (1881-5), president of Columbia University (1896-1901), mayor of New York (1902-3), and a deputy to the peace conference at the Hague (1899).

Low Archipelago, PAUMOTU, or TUAMOTU, archipelago of about eighty low coral islands in the Pacific, to the E. of the Society Is., between lat. 14° and 24° S. and long. 138° and 149° W. Total area, about 360 sq. m. Pearl fisheries are a source of wealth. The group was discovered (1606), and was officially annexed to France (1881). Pop. about 3,000.

Low Countries. See BELGIUM.

Lowe, SIR DRURY CURZON DRAKE (1830-1908), British soldier, served in the Crimea (1855-56), the Indian mutiny (1858-9), the Zulu war (1879), the Boer war (1881), and specially distinguished himself in Egypt (1882), commanding the cavalry division. For his services he was thanked by Parliament, and received a K.C.B. (1883) and a G.C.B. (1895).

Lowe, EDWARD JOSEPH (1825-1900), English botanist, was born at Highfield, near Nottingham. From 1840 to 1882 he made a valuable series of daily meteorological observations, and he has written numerous works and papers on meteorology, but is best known for his botanical works, which include *Natural History of British and Exotic Ferns* (1856-8), *British Grasses* (1858), *Beautiful Leaved Plants* (1861), *New and Rare Ferns* (1862), *Our Native Ferns* (1865), *Handbook on the Varieties of*

British Ferns (1891), and *The Ferns of Great Britain and their Varieties* (1893-4).

Lowe, SIR HUDSON (1769-1844), British general and governor of St. Helena, born in Galway, joined the army (1787). He then filled various posts of responsibility, both as military commander and as civil administrator, till appointed custodian of the Emperor Napoleon (1815) and governor of St. Helena, both of which duties he discharged until the death of Napoleon (1821). See Memoir in *Colburn's United Service Magazine* (April and June 1844), Forsyth's *Captivity of Napoleon at St. Helena* (1853), Seaton's *Sir Hudson Lowe and Napoleon* (1898), and Rosebery's *Napoleon, the Last Phase* (1900).

Lowe, ROBERT. See SHER-BROOKE.

Lowell, city, Massachusetts, U.S.A., the co. seat of Middlesex co., on the Merrimack R., 24 m. N.N.W. of Boston. Lowell is one of the most important industrial cities of New England. It has extensive manufactures of cotton and woollen goods, machinery, etc. Pop. (1910) 106,294. See Drake's *Hist. of Middlesex County* (1880), and *Illustrated Hist. of Lowell*.

Lowell, JAMES RUSSELL (1819-91), American poet, son of a non-conformist minister, born at Cambridge, Massachusetts, graduating at Harvard (1838), studied law, but soon took to literature. Lowell became professor of modern languages and literature at Harvard (1855). He was editor of the *Atlantic Monthly* (1857-62), and, with Professor Norton, of the *North American Review* (1864-72). In 1877 he was appointed United States minister at the court of Madrid, and from 1880-5 filled the same office in London. In 1841 Lowell published *A Year's Life, and Other Poems*, a distinct advance on which, both in manner

and form, is noticeable in *Poems* (1844). *Conversations on Some of the Old Poets* (1845) is a pioneer of the author's critical method and skill; while the Mexican war of 1846 stimulated his poetical masterpiece, *The Biglow Papers* (1848), which placed Lowell in the first rank of modern humorists. A second series (1867) was prompted by the civil war. Contemporary with the first series of the *Biglow Papers* are an *Arthurian Vision of Sir Launfal* (1848), a spirited *Ode to France* (1848), and a riotously vivacious *Fable for Critics* (1848). An adequate *Commemoration Ode* (1865) is also devoted to the Harvard heroes lost in the civil war. The poet's nimble fancy and love of natural beauty are illustrated in *Under the Willows* (1868). Several occasional poems of later years—*The Cathedral* (1869), *On the Death of Agassiz* (1874), and three patriotic odes (1875-6)—are specially meritorious. The concluding volume of poems was *Heartsease and Rue* (1888). Lowell's essays are learned, happily allusive, and graceful. *Fireside Travels* (1864), *My Study Windows* (1871), *Among my Books*, two series (1870-5), all have descriptive and critical articles of permanent value and charm. *Democracy, and Other Addresses* (1887) contains several admirable orations delivered by the author when minister in England. *Political Essays* (1888) touch on American interests in the latter half of the 19th century. *Latest Literary Essays* appeared (1892), and *Impressions of Spain* (1900). See Lowell's *Letters*, edited by Norton (1894), Hale's *James Russell Lowell and his Friends* (1899), and Greenslet's *J. R. Lowell* (1906).

Löwenberg, tn., prov. Silesia, Prussia, on the Bober, 27 m. w.s.w. of Leignitz. There are linen, cotton, and woollen mills. Pop. (1910) 6,341.

Lower Austria. See AUSTRIA, LOWER.

Lower Merion, tn., Pennsylvania, U.S.A., in Montgomery co., close to Philadelphia. Pop. (1910) 17,671.

Lowestoft, munic. bor., seapt., and bathing resort in Suffolk, England, 10 m. s. of Yarmouth. The fisheries are important. Pop. (1911) 33,780. Off the coast, on June 3, 1665, a great naval battle took place between an English fleet under James, Duke of York, and a Dutch fleet under Obdam van Wassenaer.

Lowicz, tn., Warsaw gov., Poland, W. Russia, 45 m. w.s.w. of Warsaw; cap. of district, on the Bzura. Industries include flax, manufacture of refined wax, chemical works, and tanneries. Pop. 12,000.

Lowland in general means land which does not rise more than from 600 to 1,000 ft. above the sea. Its limit is usually represented on orographical maps by the 600 ft. or 200 metre contour lines. Accepting the 200 metre (660 ft.) line, and excluding Antarctic lands, the area of lowlands is nearly three-tenths of the total land surface, or 154 million sq. m. This is on the N. of the mid-world mountain system in Eurasia, and w. of the Pacific mountain system in America. There is little in Africa (15 per cent.), mainly in the N. and w. of the Sahara, and 55 per cent. in Europe, while in Australia the lowland E. of the Eastern highlands is extensive, and raises the percentage to 36.

The lowlands of the world present every variety of vegetation, according to the climatic regions in which they are found, and also every phase of economic development. They are among the least-peopled (e.g. low-lying tundra and desert) and the most densely-populated parts of the globe, such as N. China, Ganges, and

Belgium, with over 500 persons per sq. m. Where the climate and drainage permit, they are the most favoured lands, and easy to exploit and to traverse. Though the lowlands form only three-tenths of the land, they probably support at least six-tenths of the inhabitants of the world.

Low Sunday, the Sunday after Easter; also called *Dominica in albis depositis*, because those who had been baptized on Easter Eve then first laid aside their white robes. The name Low Sunday was given partly to contrast it with the high festival to which it succeeded, partly perhaps because, as the octave of Easter Day, it was considered a continuation of the feast, though in a lower degree.

Lowth, ROBERT (1710-87), English ecclesiastic and scholar, born at Buriton, Hants; was appointed to the chair of poetry at Oxford (1741), resigning on his appointment to the archdeaconry of Winchester (1750). His short tenure of the see of St. Davids (1766) was followed a few months later by his presentation to that of Oxford, whence he was translated to London (1777). In 1783 he declined the primacy. His *De Sacra Poesi Hebreorum Prolections Academicae* (translated in 1787 as *Lectures on the Sacred Poetry of the Hebrews*), published in 1753, marked a new departure, in the application to Biblical poetry of the ordinary criteria of literary criticism. Among his other works are a *Life of William of Wykeham* (1758); an excellent *Short Introduction to English Grammar* (1762), often reprinted; and *Isaiah: a New Translation* (1778). An edition of his *Popular Works* appeared in 1843. See *Life and Writings of Bishop Lowth* (1787), and *Memoir by Hall in Lowth's Sermons and Other Remains* (1834).

Lowther, JAMES (1840-1904), English politician, called to the bar (1862); began his parliamentary career as M.P. for York (1865), a seat which he held till 1880, afterwards representing N. Lincolnshire (1881-5). Under Disraeli he became (1868) parliamentary secretary to the Poor Law Board, and under-secretary for the colonies (1874-8), being transferred to the Irish office as chief secretary (1878), a position he held till 1880. He failed to secure re-election for N. Lincoln (1886), and was not seen again in Parliament till 1888, when he was returned (till 1904) for the Isle of Thanet division of Kent. Lowther was a prominent member of the Jockey Club.

Lowther, JAMES WILLIAM (1855), Speaker of the House of Commons, first entered Parliament as member for Rutland (1883-5), and since 1886 has represented the Penrith division of Cumberland. He accepted office as under-secretary for foreign affairs in 1891; was elected chairman of Committee of Ways and Means and deputy-speaker in 1895, and became Speaker, June 1905, on the retirement of Mr. Gully.

Loyalty Islands, group of islands, consisting of three large and numerous small islands, in the S. Pacific, forming a chain parallel to and included in the French administration of New Caledonia, at a distance of 60 m. E. of that island. The larger islands are Uea, Lifu, and Mare. Total area, 800 sq. m. The islands grow bananas and export sandal wood. Pop. 15,000.

Loyola, IGNATIUS DE—INIGO LOPEZ DE RECALDE—(c. 1492-1556), the founder of the Jesuits, born of a noble family in the Spanish province of Guipuzcoa. Like three of his elder brothers, he followed the career of arms; but the perusal of the Life of

Christ by Ludolphus, and of certain lives of the saints, induced him to forsake the world and to consecrate himself to the service of religion. He spent ten months in a cave near Manresa, practising terrible austerities, and here he composed his famous book of *Spiritual Exercises*. The idea began to take shape in his mind of recruiting in the cause of Jesus Christ a regiment (*compagnia*) which should be a *corps d'élite*, drilled to a most perfect discipline. Having by this time learnt the necessity of educating himself better for the task before him, he went to school with children to learn the rudiments of Latin, and then studied at the universities of Alcalá, Salamanca, and Paris. At Paris he gathered round him a small band of companions, the most famous of whom was St. Francis Xavier, and at Montmartre, on Aug. 15, 1534, they all took vows together which bound them to place themselves after an interval at the disposition of the reigning pontiff. These companions came to Rome in 1537, and were cordially welcomed by Paul III., who in 1540 issued a bull approving the new order. Ignatius was elected general (1541), and, in spite of his efforts to resign, was compelled to retain the office till his death. He was canonized (1622). His day is July 31.

For the early portion of the life of Ignatius, the sole authority is a brief autobiography dictated by himself in 1564. It has been translated by Rix, under the title of *The Testament of Ignatius Loyola* (1900). Of the complete Lives, the best in English are those by Genelli (1871) and Stewart Rose (1870). In French the *Life* by Bartoli, edited by L. Michel (1893), incorporates the results of modern research. The correspondence of the saint, chiefly in Spanish, is given most

completely in the *Monumenta Historica Societatis Jesu* (1894). See also Druffel's *Ignatius v. Loyola* (1879), Gothein's *Ignatius v. Loyola und die Gegenreformation* (1896), and Joly's *Ignace de Loyola* (1898).

Lozère, dep. of S. France, formed mainly from the old Languedoc and Gévaudan, and deriving its name from Mt. Lozère, a peak of the Cévennes. It is one of the most mountainous departments of France. The mountain pastures bear many cattle and sheep. There are extensive forests. Iron and lead are mined, and marble, granite, lithographic stone, and slate are quarried. Flax, hemp, and fruits are produced, and silkworms are bred. There are three arrondissements—Mende (cap.), Florac, and Marvejols. Area, 1,996 sq. m. Pop. 128,000.

L.R.C.P., Licentiate of the Royal College of Physicians.

L.R.C.S., Licentiate of the Royal College of Surgeons.

L.S., *locus sigilli*—i.e. 'the place of the seal.'

Luang-Prabang, cap. of state of same name, Laos, French Indo-China, on the l. bk. of the Mekong, at the confluence of the Nam-khan, 250 m. w.s.w. of Hanoi. Pop. about 12,000.

Luapula. See CONGO.

Lubaczow, tn., Austria, in Galicia, 45 m. N.W. of Lemberg. Pop. (1911) 6,792.

Lubao, pueblo, prov. Pampanga, Luzon, Philippines, 5 m. s.w. of Bacolor, in a rich sugar and rice district. Pop. 20,000.

Lübben, tn., prov. Brandenburg, Prussia, on riv. Spree, 45 m. s.s.e. of Berlin; has sawmills, hosiery, paper, and shoe factories. Pop. (1910) 7,802.

Lubbock, Sir John. See AVEBURY.

Lübeck. (1.) State of the German empire, on either side of the

Trave, comprising the towns of Lübeck and Travemünde and five rural communes; area, 115 sq. m.; pop. (1910) 116,533. The country is fertile, well wooded, and produces rye, wheat, barley, potatoes, oats, hay, and large quantities of fruit. The state is governed by a senate composed of 14 life members and a council of 120 citizens. Lübeck is represented in the Reichstag by one delegate. (2.) Free city, one of the three remaining Hanse towns, on the Trave, 10 m. from its mouth, and 35 m. N.E. of Hamburg. Lübeck joined the Customs Union in 1868. There are smelting works, iron foundries, shipbuilding yards, brickworks, and breweries. The principal trade is with Denmark, Sweden, Russia, and Finland, chiefly in machinery, chemicals, preserved food, linen goods, and cigars. In 1909 the total imports of the state were valued at £21,200,000, and the total exports (piece-goods, salt, kainit, plaster-stones, clay, food stuffs, etc.) at £18,450,000. Founded in 1140, Lübeck was ceded to the dukes of Saxony in 1158, and captured by the Danes in 1201. After their expulsion it was made a free imperial city (1226), and became the leader of the Hanseatic league (1241). Annexed by France (1810), it once more regained its liberty in 1813, after the battle of Leipzig. In 1866 it joined the North German Confederation, and in 1870 became one of the states of the new empire. Pop. (1895) 69,874; (1910) 98,620. (3.) Principality of Germany, belonging to the grand-duchy of Oldenburg, but detached from the main body of the state. It lies N. of the city of Lübeck, and is bounded by Holstein on the w. and by Lübeck Bay on the e. Area, 200 sq. m. Pop. (1910) 41,272. Cap. Eutin, 22 m. s.e. of Kiel.

Lüben, tn., Prussia, in Silesia, 40 m. N.W. of Breslau. Pop. (1910) 7,818.

Lublin. (1.) Government of Poland, W. Russia, occupying the s.e. angle of same. The Vistula borders it on the w., the Polish Bug on the E., and the Wieprz crosses it. Of the surface, almost one-third is forest, less than a twelfth is pasture land, and most of the rest is arable. Chief crops: rye, wheat, oats, potatoes; of less importance are hemp, flax, beetroot. Chief exports: grain, wool, wood. The Vistula is the chief waterway. Area, 6,500sq. m. Pop. (1909) 1,436,600. (2.) City, Poland, W. Russia, cap. of above gov., 100 m. s.e. of Warsaw, on the Bistrzycza or Bistritsa, a tributary of the Wieprz (Vistula basin). It has distilleries, breweries, brickworks, thread factories, soap, tobacco, sugar, cement, starch, candle, and agricultural machinery manufacturers, and flour mills. Pop. 62,000.

Lubni, tn., Poltava gov., S.W. Russia, 75 m. W.N.W. of Poltava city, cap. of dist., on the r. bk. of the Sula, a tributary of the Dnieper. Pop. 10,000.

Lubricants and **Lubricators** are materials that are introduced between moving surfaces, in order to reduce the friction between them, and to prevent them becoming hot. Lubricants are of very varied nature, differing according to the nature of the surfaces in contact, and the speed, pressure, and temperature at which the motion takes place. They may be either solid, semi-solid, or liquid—the first-named, such as graphite or French chalk, acting chiefly by filling up the roughnesses of the surfaces in contact, and coating them with a soft and slippery material. They are chiefly used for wood and rough iron bearings. Liquid and semi-solid lubricants vary from limpid oils to stiff greases,

being almost invariably either hydrocarbon oils, of mineral origin and of high boiling point; vegetable or animal fatty oils, such as olive, rape, castor, lard, and sperm oils; or mixtures of the two, often thickened or 'solidified' with soaps and other substances. These lubricants act principally by converting, to a greater or less extent, the sliding or rolling friction between the parts into the much smaller fluid friction between the particles of the liquid. They should, therefore, have sufficient viscosity to prevent them being squeezed out by the pressure, though not so much as to hinder the motion. A lubricant should not be volatile, or decomposed by heat, or congeal with cold; the former quality being especially important in those oils used to lubricate the interior of cylinders of engines, particularly gas-engines, in which the temperature is very high. Heavy hydrocarbon oils are best for this purpose.

It is also important that a lubricant should not be oxidized by exposure to the atmosphere, and thus clog or 'gum'; neither should it be acid, so as to act upon the metal of the bearings, and in this respect the hydrocarbons are better than most other oils. Finally, it should not be readily inflammable, and should be able to carry off any heat generated by what friction there is.

Lubricators are the mechanical contrivances used to ensure a constant supply of the oil or other lubricant to rubbing surfaces. There are several well-defined forms of lubricators, the most important of which are here given. Fig. 1 shows a *siphon lubricator*, one of the commonest forms for simple bearings. The oil is siphoned out of the cup, down the centre hole leading to the bearing, by means of a wick,

which should first be well soaked in oil. The end of the wick should hang lower than the bottom of the cup; the supply of oil is regulated by the amount



FIG. 1.

of wick used. When the machine is stopped, the wick should be lifted out to prevent the oil being wasted. Fig. 2 shows a simple form of *cup lubricator*,

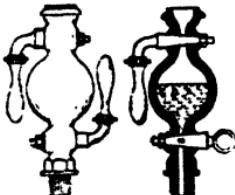


FIG. 2.

used to supply oil to a vessel under pressure, as the steam-chest or cylinder of an engine. The lower cock being closed, the cup is filled with oil, and on



FIG. 3.

closing the upper cock and opening the lower the oil runs into the cylinder. Fig. 3 shows the *Stauffer lubricator*, in which semi-solid grease is used as a

lubricant. The cap of the lubricator is filled with the grease, and then on screwing it down the grease is forced along the pipe to the bearing. In practice, an occasional turn of the cap is all that is necessary. Fig. 4 shows a *needle lubricator*, a type much used for shafting. It consists of a reservoir, usually of glass, having a hole at the bottom through which a wire needle passes, the needle being an easy fit in the hole, and the bottom end resting on the shaft. When the shaft is stationary, capillary attraction prevents the flow of oil past the needle; but when the shaft is in motion, the vibration of the needle allows a



FIG. 4.

small amount of oil to pass. For passing oil into the steam-pipe or valve-chest of a steam-engine, a *sight-feed lubricator* is often used. In this form of lubricator steam is condensed in a small coil provided for the purpose, and displaces the oil drop by drop. The oil passes up through a glass tube on its way to the steam-pipe or steam-chest, so that the amount supplied can be observed. A small valve is provided for adjusting the amount. If a bearing is to carry a very heavy load, a force-pump is used to force oil into the bearings. Sometimes a very heavy vertical shaft is water-borne or oil-borne. In the case of dynamo bearings, lubrication is generally effected

by a loose ring which lies on the journal and also dips into an oil cistern. See Archibutt and Deely's *Lubrication and Lubricants* (1900), and Hurst's *Lubricating Oils, Fats, and Greases* (1893; 2nd ed. 1902).

Lubrin, tn., Spain, in Andalusia, prov. of and 34 m. N.E. of Almeria; has marble quarries. Pop. 6,600.

Luca della Robbia. See ROBBIA.

Lucan, par. and small tn., Ireland, in co. of and 7 m. w. of Dublin. Pop. 1,100.

Lucan, GEORGE CHARLES BINGHAM, EARL OF (1800-88), English field-marshal, was born in London, and entered the army (1816). In command of the cavalry in the early part of the Crimean war, it fell to him at Balaklava to carry out the order which resulted in the disaster to the Light Brigade. Blamed by Lord Raglan, he was recalled, but was not generally held to be responsible for the blunder. He published *English Cavalry in the Army of the East* (1856). See Kinglake's *The Invasion of the Crimea* (1863-87).

Lucan, MARCUS ANNAEUS LUCANUS (39-65 A.D.), the chief Roman poet of the 'silver age,' a native of Corduba in Spain; was educated at Rome under the Stoic Cornutus, and acquired a reputation at an early age. Nero made him questor—a distinction which gave him a seat in the senate. Unfortunately Nero himself claimed to be a literary genius, and found a rival in Lucan. At a public contest the two competed, and the prize was awarded to Lucan. This aroused Nero's jealousy, and he forbade Lucan to publish or recite poems. In his resentment Lucan joined Piso's conspiracy against Nero (65 A.D.), and when the plot was detected he was put to death. His only surviving work is the

Pharsalia. It tells the story of the civil war between Cæsar and Pompey, but is unfinished. The best editions are by Weber (1821-31), Haskins (1887), Hosius (1892), and trans. by Ridley (1905).

Lucania, div. of ancient Italy, bounded on the N. by the riv. Silaria, separating it from Campania; on the E. by Apulia and the Gulf of Tarentum; and on the S. by the river Laus, which separated it from Bruttium. The Lucanians were of Samnite race, and were subdued by the Romans in 272 B.C. See Mommsen's *History of Rome* (Eng. trans. 1894).

Lucaris, CYRIL (c. 1572-1638), Greek prelate and theologian, native of Crete, imbibed in Switzerland many of the Protestant doctrines, which he strove to introduce during his patriarchate at Alexandria, and subsequently at Constantinople, whither he went in 1621. These efforts led to his banishment to Rhodes and Tenedos successively, and ultimately to his sudden and violent removal from Constantinople, when he is believed to have been strangled. See *Life* by Pichler (1862).

Lucas, JOHN SEYMOUR (1849), English historical and portrait painter, born in London, trained at the Royal Academy schools, was elected A.R.A. (1886), and R.A. (1898). Among his best works are *The Armada in Sight* (1880), a vigorous representation of Drake finishing his game of bowls on Plymouth Hoe; *William the Conqueror Granting the First Charter to the City of London* (1898), a fresco in the Royal Exchange; *After Culloden* (1884), purchased by the Royal Academy; *Flirtation*, in the Guildhall Gallery. In 1901 Mr. Lucas was commissioned by King Edward VII. to paint the reception of the Moorish embassy.

Lucas van Leyden (1494-1533), Dutch painter and en-

graver, was the chief rival of his contemporary, Albrecht Dürer. Displaying his gifts at a very early age, he had at sixteen produced a number of engravings, including a famous *Ecce Homo*. Among his paintings the best examples are *The Last Judgment*, at Leyden; *Christ Healing the Blind Man of Jericho*, at St. Petersburg; and *The Card Party*, at Wilton House, England.

Lucayos Islands. See BAHAMAS.

Lucca, tn., cap. prov. Lucca, Tuscany, Italy, on riv. Serchio, 13 m. N.E. of Pisa. Its cathedral of San Martino is rich in paintings and sculpture. The town has extensive silk mills; jute, velvets, tobacco, and cottons are also manufactured. Agriculture, however, is the chief industry. Lucca has been the seat of an archbishop since 1726. Its history dates from 177 B.C., when it was taken by the Romans. In the 12th century A.D. it became a free town. In 1799 it was taken by the French, and in 1805 was erected into a principality by Napoleon I. for his sister, Princess Bacciochi. In 1847 the duchy of Lucca was united to Tuscany, and in 1860 it was annexed to the kingdom of Italy. In the valley of the Lima, a tributary of the Serchio R., some 15 m. to the N., are the famous baths of Lucca. Pop. tn. 31,000; comm. 75,000. The prov. of Lucca, bordering on the Gulf of Genoa, is one of the most fertile in Italy. Area, 558 sq. m.; pop. 343,000.

Lucena, city, Andalusia, Spain, prov. of and 37 m. S.S.E. of Cordova; manufactures textiles, bronzes, watches, and earthenware. Red wines and brandy are also produced. Pop. 21,300.

Lucera, tn., prov. Foggia, S. Italy, 12 m. W.N.W. of Foggia; has a cathedral (14th century), formerly a Saracenic mosque. Trade in silk. Pop. 17,500.

Lucerne (grass). See ALFALFA. **Lucerne** (Ger. *Luzern*). (1.) Swiss canton, ranking after Zürich and Bern, and admitted into the Swiss confederation (1332). Area, 580 sq. m. Pop. (1910) 166,782, mainly German-speaking Roman Catholics. (2.) Town, cap. of above canton, 24 m. S.S.W. of Zurich, picturesquely built on both banks of the Reuss as it issues from the lake. It is now the chief centre of foreign tourists in summer, and is on the main line of the St. Gotthard Ry., which was taken over by the Swiss Federal Railways in 1909. To the E. rises the celebrated viewpoint of the Rigi, and to the S.W. that of Pilatus. The features of interest include the mediæval towers and walls; the bridges (seven), including the covered wooden bridge, with its paintings representing scenes from the lives of patron saints, and a 'Dance of Death'; and the 'Lion of Lucerne,' a rock monument modelled by Thorwaldsen commemorating the heroic defence of Louis XVI.'s Swiss Guards during the attack on the Tuilleries (Aug. 10, 1792). The exports include sewing machines, lifts, cotton goods, and cheese. Pop. (1910) 39,152. (3.) **Lake** ('Lake of the Four Forest Cantons'), one of the most beautiful of European lakes, bordered by the cantons of Schwyz, Uri, Unterwalden, and Lucerne. Roughly cruciform in shape, it covers an area of 44½ sq. m.; has a length of about 24 m., a maximum breadth of 2 m., and a depth of 700 ft.; its alt. is 1,434 ft. The lake is subject to sudden and violent storms. The Rütli and Tell's Platte are linked with the fame of William Tell.

Lu-chu Islands. See LOO-CHOO.

Lucian (c. 120-190 A.D.), the greatest Greek writer of the Christian era, was a native of

Samosata on the Euphrates. Lucian was first apprenticed to his uncle, a sculptor, but abandoned this art for literature. He became known as a rhetorician, and travelled to Greece and Italy, and even to Gaul, where he was for a short time a professor of rhetoric. By 160 A.D. he was in Antioch, but removed to Athens, where he found the best appreciation of his work. The majority of his writings were produced between 160 and 180 A.D. The works attributed to Lucian number eighty-three; the genuineness of but forty-eight of these has never been assailed, and perhaps about twenty are undeniably spurious. Many of his works are only a few pages long. It is as a satirist that he has won immortality. Perhaps his most characteristic works are those which deal with the next world, the *Dialogues of the Dead*, the *Necyromantica*, and others; those which satirize the gods, the *Tragic Zeus*, the *Icaromenippus*, and others; but his *Vera Historia* has had more influence on modern literature, having inspired Rabelais, Swift, and Voltaire. The best editions of his works are those of Dindorf (1858), Jacobitz (1874), and Sommerbrodt (1886-93). There is an English translation by Franklin (1781), which is nearly complete; a complete translation (Athens, 1895); also one by Irwin (1894) of six dialogues, one by Campbell Davidson (1902) of several others, and a translation of his works by H. W. and F. G. Fowler (1905). See also Collins's *Lucian* (in Ancient Classics Series, 1873), Croiset's *La Vie et les Œuvres de Lucien* (1892), Mahaffy's *History of Classical Greek Literature* (1880), Hime's *Lucian the Syrian Satirist* (1900), and Sir R. C. Jebb's *Essays and Addresses* (1907).

Lucifer. (1.) Is properly the Latin name of the planet Venus when it appears as a morning

star; it corresponds to the Greek Phosphorus. As the evening star, it is called Vesper or Hesperus. (2.) In mythology, Lucifer was represented as a son of Astraeus or Cephalus and Aurora (the dawn). (3.) The name is used in the A.V. of the Bible to translate the Heb. *hôlî*, 'shining one,' R.V. 'day star,' in Isa. 14:12, and is there applied to the king of Babylon (or Assyria). Owing to a false comparison of Luke 10:18 ('I beheld Satan as lightning fall from heaven') with the passage in Isaiah, Tertullian, Gregory the Great, and other fathers regard the name as applying to Satan.

Lucigen Lamp. See LAMPS.

Lucilius, GAIUS (148-103 B.C.), born at Susea, was the founder of the Roman school of satirical poetry, represented in later centuries by Horace, Persius, and Juvenal. Of his works some eight hundred fragments remain. Cicero, Horace, and Quintilian are the chief ancient authorities on his life. See also Mommsen's *Hist. of Rome* (1894), and Mackail's *Latin Literature* (1895). The best editions of the fragments are those of Müller (1872) and Lachmann (1876). Müller also published *Leben und Werke des Lucilius* (1876).

Lucina, in Roman mythology the goddess of light, or rather the goddess who brings to light, presiding over the birth of children. Both Juno and Diana had the surname of Lucina. She corresponds to the Greek Eileithyia. See Horace's *Carmen Saculare*.

Lücke, GOTTFRIED CHRISTIAN FRIEDRICH (1791-1855), German Biblical exegete, was born near Magdeburg. He was called to the chair of theology at Bonn (1818), and to Göttingen (1827). His great work is his *Grundriss der N.T. Hermeneutik* (1817), which, while fixing the scientific principles of exegesis, demands as equally necessary the presence

of the religious sense. He exemplified his theories in his *Kommentar über die Schriften des Evangelisten Johannes* (1820-25; partly trans. by Repp in the Bib. Cabinet), and also wrote an introduction to the *Offenbarung des Johannes* (1832). See Sander's *Biographie* (1890), and Schleiermacher in *Studien und Kritiken* (1834).

Luckenwalde, tn., prov. Brandenburg, Prussia, on the Nuthe, 30 m. s.s.w. of Berlin; has cloth, wool, and hat manufactures, machine shops, brick fields, and iron foundries. Pop. (1910) 23,475.

Lucknow, chief tn. of dist. of same name, and cap. of a dist. and of a div. of the United Provs of Agra and Oudh, is a cantonment and municipality on the Gumti, 530 m. w.n.w. of Calcutta. Lucknow is picturesquely situated. Its chief architectural features are the fort, the Imambara, or mausoleum of Asaf-ud-Daula, and the Jama Masjid. The manufacture of muslins and shawls, gold and silver embroidery, glass, and pottery ware are its principal industries. There are also large railway shops. Pop. 265,000. The dist. has an area of 970 sq. m. and a pop. of 795,000. The area of the div. is 12,050 sq. m. and its pop. about 6,000,000. See Innes's *Lucknow and Oude in the Mutiny* (1895), and Forrest's *Cities of India* (1903).

Luçon, tn., dep. Vendée, France, 19 m. s.e. of La Roche-sur-Yon, on canal of Luçon. Seat of a bishop since 1317. Manufactures liqueurs, and has copper and iron founding. Pop. 6,800.

Lucretia, the wife of Lucius Tarquinius Collatinus. It is said that when the Romans were engaged in the siege of Gabii, Lucius Tarquinius and other nobles vied with each other in praising the virtue of their wives. To test which best deserved their praise, they returned suddenly to Rome,

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and found Lucretia alone, duly engaged in her household tasks. Soon afterwards her husband's cousin, the infamous Sextus Tarquinus, forced his way into her house at night and outraged Lucretia. Next morning she summoned her husband and her father, and after telling her sorrow she stabbed herself to death (509 B.C.). The tale is told by Livy and Ovid. See Shakespeare's *Rape of Lucrece*.

Lucretius (c. 98-55 B.C.), Roman poet, whose full name was Titus Lucretius Carus. Practically nothing is known of his life. His great work, *De Rerum Natura*, a poem in six books, amounting to upwards of 7,400 hexameters, is an exposition of the philosophy of Epicurus, in which he believed. It is Lucretius's first object, as it was that of Epicurus, to free mankind from the fear of the supernatural. He expounds the Epicurean system with extraordinary clearness, force, and dignity; yet the best parts of his poem, to modern readers, are his digressions—as, for example, on the fear of death, the origin of the world, the development of society, and the description of the plague of Athens. Of all Latin poets, Lucretius best represents Roman dignity. The best editions are those of Lachmann (1866), Munro (with explanatory notes, 1891-3), and Brieger (1894); bks. i. to iii., Lee (1882); bk. v., Duff (1888). Eng. trans., verse, Creech (1682); prose, Munro (1873). See Malloch's *Lucretius* (Ancient Classics, 1878), Masson's *Atomic Theory of Lucretius* (1884), Mackail's *Latin Literature* (1895), and Santayana's *Three Philosophical Poets* (1911).

Lucrinus Lacus, the Lucrine lake, was really only the inner part of the Bay of Cumæ (*Sinus Cumanus*), off the coast of Campania, in ancient Italy; but at an early date it was separated from the rest of the bay by a dike

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about a mile long. It was famous for its oyster beds. Agrippa, the minister of Augustus, made a passage from the lake of Avernus into the Lucrine lake, and from that into the sea, thus constructing the great Julian harbour. In 1538 A.D. the Lucrine lake was filled up by a volcanic eruption, a conical hill, the Monte Nuovo, being formed on its site. See Grise's *Orbis Latinus* (1861).

Luculia, a genus of evergreen shrubs, order Rubiaceæ. The two species are *L. gratissima*, a native of the Himalayas, which bears terminal, many-flowered cymes of rose-coloured flowers; and *L. pinnearia*, a native of the Khasia mountains, with large white flowers.

Lucullus, **LUCIUS LICINIUS** (c. 110 B.C. to 57 B.C.), famous Roman general, belonged to a plebeian family; first distinguished himself in the Social war, and then accompanied Sulla to Asia as his questor in the war against Mithridates, in which he did good service, remaining in Asia until 80 B.C. In 77 B.C. he was praetor, and afterwards governed Africa with justice and success. In 74 he became consul, and in the campaigns of 74, 73, and 72 destroyed Mithridates's forces, conquered his kingdom of Pontus, and drove the king himself to take refuge in Armenia. In 69 war broke out with Armenia, as Lucullus required Tigrane, the Armenian king, to surrender Mithridates; and in that year he gained a brilliant victory over Tigranea. In 68 he advanced far into Armenia, but next year had to retreat. He was then superseded by Pompey. After his return to Rome, Lucullus took little part in politics, but lived a life of luxury. Plutarch has left a Life of Lucullus. See also Mommsen's *History of Rome* (1894).

Lucy, **SIR HENRY W.** (1845), 'Toby, M.P.', of *Punch*, was born

near Liverpool. He joined the staff of the *Pall Mall Gazette* (1870) and the *Daily News* (1873), being the chief of the gallery staff on the latter paper, at the same time writing 'Under the Clock' for the *World*—a column afterwards transferred to the *Daily Telegraph*. On the death of Tom Taylor, in 1880, he took up the writing of 'The Essence of Parliament' for *Punch*, which, under the title of 'The Diary of Toby, M.P.', is still one of the brightest articles in the weekly press. He has written diaries of the various Parliaments since 1880, and other works, including *Faces and Places* (1895); *Mr. Gladstone: a Study from Life* (1896); *Peeps at Parliament* (1903); *Later Peeps at Parliament* (1905); *Memories of Eight Parliaments* (1908); and *Sixty Years in the Wilderness* (1909). In 1909 he received a knighthood.

Ludd. See LYDDA.

Luddenden Foot, small tn., W. Riding, Yorkshire, England, 6 m. w. of Halifax; manufactures woollen goods. Pop. (1911) 2,904.

Luddite Riots were the outbreaks in which the popular discontent expressed itself in the Midlands about 1811-18. General distress being caused partly by the 'Continental system' which crippled British export trade to the Continent, and partly by the progress of the industrial revolution, the anger of the rioters was directed against the new machinery, much of which was destroyed. The name was derived from Ned Lud, a Leicestershire imbecile, who, in a fit of passion, demolished two stocking-frames. See Pellew's *Life of Lord Sidmouth* (1847); Peel's *Risings of the Luddites, Chartist, and Plug-drawers* (2nd ed. 1888); and Political History of England, xi. (1906).

Lüdenscheid, tn., Westphalia, Prussia, 19 m. n. by s. of Barmen; manufactures cutlery, machinery,

and cotton; has also iron foundries. Pop. (1910) 32,297.

Lüderitz Bay. See ANGRA PEQUENA.

Ludgvan, or LUDJAN, par. and tn., Cornwall, England, 3 m. N.E. of Penzance. Pop. (1911) 2,213.

Ludhiana, cap. of Ludhiana dist., Jalandhar div., Punjab, India, 73 m. N.W. of Ambala; was founded in 1480 by the Delhi princes of the Lodhi family. It has trade in grain, and manufactures shawls, cloths, and turbans of Rampur wool. Pop. 48,000.

Ludington, city and co. seat and summer resort, Mason co., Michigan, U.S.A., on Lake Michigan, at the mouth of Marquette R.; has trade in lumber, grain, and coal. Pop. (1910) 9,132.

Ludinovsk, tn., Kaluga gov., Central Russia, on a branch of the Orel-Smolensk railway, 40 m. N.E. of Jukovskiy; has locomotive, carriage-building, iron, and glass industries. Founded in 1755. Pop. 12,000.

Ludlow, munic. bor., Shropshire, England, 12 m. N. of Leominster, at the confluence of the Corve and Teme. Here Butler wrote *Hudibras*, and here Milton's *Comus* was first performed (1634). Pop. (1911) 5,926. See *Histories* by Clive (1841), and Wright (1851).

Ludlow, EDMUND (1617-93), English soldier and republican, was born at Maiden Bradley, Wiltshire. Returned to Parliament by Wiltshire in 1645, he was partly responsible for 'Pride's Purge'; he sat as one of the king's judges, and signed his death-warrant. In 1651-2 he did much towards the subjugation of Ireland; but disagreement with Cromwell led to his retirement from public life until the protector's death. Re-entering Parliament (1659), he was impeached for treason in 1660, and forced to flee to Vevey, where he died. His valuable *Memoirs* were pub-

lished at Vevey (1698-9; ed. C. H. Firth, 1894). See also Guizot's *Portraits Politiques* (1852; trans. by Scoble as *Monk's Contemporaries*, 1861).

Ludwig, or LOUIS. The German emperors of this name are:—LOUIS I. (778-840), 'le Débonnaire,' son of Charlemagne, whom he succeeded as emperor in 814.—LOUIS II. (c. 822-875), son of Lothaire I.; became associated with his father in 849, and succeeded to the imperial crown in 855.—LOUIS III. (c. 880-929), 'the Blind,' grandson of Louis II.; became emperor in 901, but, owing to his infirmity, was only nominal ruler.—LOUIS IV. (893-911), 'l'Enfant,' last of the Carlovingians; succeeded his father, Arnulf, in 900.—LOUIS V. (c. 1287-1347), 'the Bavarian'; elected 1314; was excommunicated for denying papal authority in Germany. He was opposed by Clement VI., who promoted the election of Charles of Moravia as emperor in 1346.

Ludwig I. (1786-1868), king of Bavaria, son of King Maximilian Joseph, whom he succeeded (1825). He supported the Greek struggle for independence (1826), erected the Walhalla in Munich (1830), and abdicated on his refusal to grant political reforms (1848).

Ludwig II. OTTO FRIEDRICH WILHELM (1845-86), grandson of the preceding, succeeded his father, Maximilian II. (1864); opposed Prussia in the war of 1866, but joined the German empire in 1870. He was a vigorous opponent of the Ultramontanea. An extraordinary passion for building palaces induced an inquiry to be made as to his mental condition, and he was declared insane. Shortly afterwards he drowned himself in a neighbouring lake. Ludwig was the lifelong friend and supporter of Richard Wagner. See *Life* by C. Tschudi (Eng. tr. 1908).

Ludwig, KARL FRIEDRICH WILHELM (1816-96), German physiologist, born at Witzenhausen Hesse; became professor of anatomy and physiology at Zürich (1849), at Vienna (1855), and of physiology at Leipzig (1866-95). Ludwig was one of the most celebrated of modern physiologists, and expressed many original ideas on the subject in his *Lehrbuch der Physiologie des Menschen* (1852-56). Under his guidance the Physiological Institute at Leipzig became an important centre of original scientific research.

Ludwig, OTTO (1813-65), German dramatist, born at Eisfeld, Saxe-Meiningen. His first work, *Der Erbförster*, appeared in 1853. This was followed by *Die Makabäer* (1855). One other notable work, a tale, *Zwischen Himmel und Erde* (1857), was all that he lived to finish and publish, though there appeared after his death *Shakespeare-Studien* (1871). His *Gesammelte Schriften* were published in 1891-2, and again in 1900 by Adolf Bartela.

Ludwigsburg, tn. and second royal residence of the kingdom of Württemberg, Germany, 10 m. N. of Stuttgart; is the principal military depot of Württemburg. Has cannon foundry and arsenal; manufactures chemicals, cotton and woollen goods. Pop. (1910) 24,934.

Ludwig's Canal, canal, Bavaria, Germany, from Dietfurt on the Altmühl to Bamberg on the Regnitz, connecting the basins of the Danube and the Rhine.

Ludwigshafen, tn. in the Rhine palatinate, Bavaria, Germany, on the l. bk. of the Rhine, opposite Mannheim; manufactures aniline dyes and soda, and has trade in timber, iron, and coal. Pop. (1910) 83,307.

Ludwigsburg, tn., Germany, in Mecklenburg, 22 m. s. by r. of Schwerin. Pop. (1910) 6,926.

Luff, to put the tiller towards the lee side of a ship, in order to make her sail nearer to the wind.

Lugano. (1.) Largest tn. of the Swiss canton of Ticino, on the N. shore of Lake Lugano, and on the main St. Gotthard railway. Though politically Swiss, Lugano is Italian in every other respect. Pop. (1910) 12,999. (2.) LAKE, in Switzerland and N. Italy, between Lakes Maggiore and Como, is 22 m. long and about 1½ m. broad. It is surrounded by imposing scenery. Alt. 875 ft.

Lugansk, or LUGAN, tn., Ekaterinoslav gov., S. Russia, 16 m. s.e. of Slavyanoserbsk. It has an important trade in grain, cattle, skins, wine, and wool. There are iron and coal mines near, and the industrial establishments include iron foundries and engine shops. Pop. 35,000.

Luganskaya Stanitsa, tnship. of Don Cossacks, in territory of the Army of the Don, S. Russia, 45 m. N.W. of Kamenskaya Stanitsa, on the Donets. Pop. 20,000.

Lugar, vil., Ayrshire, Scotland, 2 m. N.E. of Old Cumnock; has extensive iron works. Pop. 1,300.

Lugard, Sir FREDERICK JOHN DEALTRY (1858), African traveller and administrator, has served in Afghanistan, Burma, the Sudan, and Uganda, and established imperial interests in W. Africa. He was commandant of the W. African Frontier Force, which he raised (1897-9), and from 1900 high commissioner of N. Nigeria, with the rank of brigadier-general. He has been governor and commander-in-chief of Hong-Kong since 1907. In 1911 he was made a G.C.M.G.

Lugard, LADY (*née* Flora Shaw), author and journalist, was at one time head of the colonial department of the *Times*, and has undertaken special commissions for that newspaper to S. Africa and

Australia in connection with the Kanaka labour in the Queensland sugar industry. She has published *Castle Blair* (1878), and *A Tropical Dependency* (1905). She married Sir Frederick Lugard in 1902.

Lugau, tn., Saxony, 10 m. s.w. of Chemnitz; has spinning mills. Pop. (1910) 8,709.

Lugdunum. See LYONS.

Lugdunum Batavorum. See LEYDEN.

Lugger, a small vessel having one, two, or three masts, upon each of which is set a square 'lugsail.' She may also carry topsails, and have a bowsprit on which are set one or more jibs.

Lugo. (1.) Province, Galicia, N.W. Spain, an extremely mountainous district watered by the Minho, with a coast-line on Bay of Biscay. The slopes of ranges produce cattle and timber; the valleys abound in agricultural supplies and fibres. There are mines of copper, iron, and lead, and quarries of slate, granite, and marble. Leather, woollen, and linen goods, and preserves are manufactured. Area, 3,814 sq. m.; pop. (1910) 452,197. (2.) City (anc. *Lucus Augusti*), cap. of above prov., on riv. Minho, 48 m. E.S.E. of La Corufia; has textile and tanning industries. Pop. 28,000. (3.) Town, Central Italy, prov. of and 15 m. w. of Ravenna. Important annual fair (Sept.). Manufactures rope and furniture. Pop. (comm.) 27,500.

Lugos, chief tn. of co. Krassó-Szöreny, S. Hungary, and an episcopal see of the Greek Catholic Church, 33 m. E. by S. of Temesvar. Good wine is made. Pop. 16,000.

Lug Sall. See SAILS AND RIGGING.

Lug-worm, or LOB-WORM (*Arenicola piscatorum*), a marine annelid or segmented worm which is greatly prized as food by many ground-feeding fish, and is in con-

sequence valued as bait. It is a burrowing worm, and occurs in vast numbers on muddy shores. The animal is cylindrical in shape, the anterior region being thickest, and sometimes reaches a foot in length. With the dark brown or green tint of the body the bright red gills contrast strongly.

Luik. See LIEGE.

Luines, DUC DE. See LUYNES.

Luini, BERNARDINO (c. 1470-c. 1535), Italian painter of the Lombard school, was born at Luino, on the Lago Maggiore. Many of his works are to be found in the churches and galleries of Milan, Saronno, and Lugano. He is one of the five painters for whom Ruskin claims supremacy in his *Modern Painters*. See Williamson's *Bernardino Luini* (1899).

Luino, or **LUVINO**, tn., prov. Como, Lombardy, Italy, on the E. shore of Lake Maggiore, 22 m. W.N.W. of Como; has cotton-weaving and silk-spinning. Pop. 6,000.

Luise, AUGUSTE WILHELMINE AMALIE (1776-1810), queen of Prussia, daughter of Karl, Duke of Mecklenburg - Strelitz, was born at Hanover (1776), and married the prince-royal of Prussia, afterwards Frederick William III., in 1793. She particularly distinguished herself by her resolute conduct during the Napoleonic campaign, and the Prussian order of Luise was instituted in her honour. See Hudson's *Life and Times of Louise, Queen of Prussia* (1874), and *Lives*, in German, by Lonke (1903) and Brendicke (1904).

Luisia, a genus of tropical epiphytal orchids with dull-coloured flowers. A few of the species are cultivated, most commonly *L. platyglossa*, which is characterized by its hairy roots and its somewhat dingy purple flowers.

Lujan, or LUXAN, tn., Argentina, prov. of and 50 m. w. of Buenos Aires. Pop. 12,000.

Luke, THE GOSPEL ACCORDING TO, the third book in the canon of the New Testament, often called the 'third gospel.' It presents a well-ordered account of the public ministry of Jesus, using both the Mark narrative and the Matthew *logia* (see LOGIA), but with considerable freedom, and employing independent sources for the birth and early years of Christ. (See GOSPELS.) The matter peculiar to Luke, both history and parable, is of the highest interest and value. Very ancient tradition identifies the author with Luke, 'the beloved physician,' the companion of the apostle Paul (Col. 4:14, etc.), and critics are at least agreed that he was one with the writer (or compiler) of the book of Acts. The assonances between the third gospel and Paul are striking—e.g. the use of the term 'justify' (18:14 and other four times; frequent in the epistles); forgiveness through faith (7:36-50); the universality of the gospel (10:25-37, 17:11-19): cf. also the almost identical phraseology in the account of the last supper (Luke 22:19 f.; 1 Cor. 11:23 f.). Professor W. M. Ramsay ranks Luke as a historian of the highest qualities (*St. Paul*, etc.), and Renan speaks of the work as 'the most literary of the gospels.' See the commentaries by Meyer (trans.), later German edition by B. and J. Weiss, Godet, Plummer (*Internat. Crit. Com.*), Holtzmann (in *Hand-Com.*), Farrar (Cambridge Bible), Adeney (Century Bible).

Luleå. (1.) Seaport and chief tn., co. Norrbotten, Sweden, on isle of Sandö, at mouth of riv. Luleå, 135 m. N.N.E. of Umeå; has trade in Gällivare iron ore, timber, tar, salmon, and reindeer hides. In 1909, 2,415,181 tons of

iron ore were exported, its value being £1,222,100. Pop. (1911) 8,959.

(2.) River of N. Sweden, rises in two sources near the lofty Sulitelma (6,200 ft.), and reaches the Gulf of Bothnia at Luleå. Length, 255 m.

Lull, RAMON (c. 1236-1315), Spanish Christian philosopher, known as 'the enlightened doctor,' born in Majorca, spent his life in preaching throughout Europe the truth of the gospel as proved by reason. To him were due the study of Oriental tongues in Oxford, Paris, Bologna, and other seats of learning, and the foundation of the Lullian school of rational Christianity. His principal works are *Ars Brevis* and *Ars Magna*. A collected edition of his works was published at Mayence (1721-42). See Helfferich's *Raymond Lull* (1858), Canalejas's *Las Doctrinas del Doctor R. Lullo* (1870), and Barber's *Raymond Lully* (1903).

Lullutpur. See LALITPUR.

Lully, GIOVANNI BATTISTA (1633-87), the founder of French opera, was born at Florence, and taken in boyhood to Paris, where he became a member of the band of Louis XIV., who made him director of music to the royal family (1662), and later director of the Académie Royale de Musique (1672). His most important compositions are *Alceste* (1674), *Thésée* (1675), *Persée* (1682), and *Armide* (1686). See *Life*, in French, by Radet (1891).

Lully, RAYMOND. See LULL, RAMON.

Lumbago (Lat. *lumbus*, 'loin'). While most believe that lumbago is a rheumatic affection of the lumbar muscles and fascia, many authorities attribute it to rheumatism of the sacro-iliac ligaments and cartilages. True lumbago is sudden in its onset. The patient, on attempting to rise from a stooping posture, has a sensation of being gripped across the loins, and is at first power-

less to move. After a time, and with considerable pain, he can straighten his back, but he then finds himself unable to stoop. Lumbago is seldom accompanied by rise of temperature or by much disturbance of the general health, and at the end of an attack the pain and stiffness may disappear as suddenly as they came. Those who are subject to the condition should wear warm clothing, eat plentifully of good food, and avoid cold and damp. Cod-liver oil is also a prophylactic. During an attack a purge should be taken; and alkalis and aconite are beneficial, with large quantities of hot drinks, such as weak tea, to promote sweating. For this purpose hot-water baths and Turkish baths are also useful. As counter-irritants, mustard plasters and turpentine stupes may be applied to the back. In a severe attack, dry cupping is of service. In slight attacks belladonna plaster soothes the pain.

Lumbar Puncture. The operation of lumbar puncture has in the past few years become firmly established as an indispensable diagnostic and therapeutic measure, and has done more to place our knowledge of meningitis on a scientific basis than any other modern procedure. It consists in puncturing the spinal canal below the level of the second lumbar vertebra, the point where the spinal cord proper terminates, with the object of removing some of the cerebro-spinal fluid which normally surrounds the cord. The patient is placed on the left side in a horizontal posture, at the edge of the bed; the spine is flexed so as to separate the spinous processes and facilitate the introduction of the needle. The skin, needle, and canula having been sterilized, the needle is inserted through the skin a quarter of an inch to the right

of the middle line, and pushed upwards and backwards for an inch and a half. The best site for puncture corresponds to the highest point of the iliac crests. In its passage it will pass through the interspinous ligaments, and the needle is then withdrawn; and if properly inserted, a few drops of perfectly clear fluid will come out of the canula, drop by drop, and should be received into a sterile test tube for further examination. The important points to note are that in health (1) the fluid comes out drop by drop—that is, at low pressure; and (2) it is perfectly clear, and on microscopic examination of the centrifuged fluid very few cells are present. It is otherwise in disease, especially of the central nervous system, in which the naked eye, microscopical, and chemical characters of the fluid may be profoundly altered, the nature of these changes present being of the utmost value in diagnosis. In place of coming out slowly drop by drop, it may come out quickly, or even in a continuous stream, thus showing that the pressure of the fluid in the cord is greatly increased. In place of being clear, it may show varying degrees of turbidity, due to the great increase of cellular elements; it may even be blood-stained; the chemical characters may be changed, there being an increased or diminished amount of albumin; and bacteriological examination may reveal the presence of bacteria. In certain organic diseases of the cord there is a large excess of leucocytes in the cerebro-spinal fluid, and the type of leucocyte present gives a clue to the nature of the lesion. Thus in acute tuberculous and syphilitic affections of the cord the mono-nucleated cells are present in excess, whereas in other forms of meningitis the multi-nucleated cells predomi-

nate. The operation of lumbar puncture is also employed therapeutically to relieve conditions of increased intra-cranial pressure from whatever cause; comatose patients have been restored to consciousness by the operation. For this purpose it has been used chiefly in cases of tuberculous and epidemic cerebro-spinal meningitis and in uremia. Spinal anesthesia is also induced by the introduction of anesthetics by this route. See ANESTHESIA, SPINAL.

Lumbering. The growing, felling, and preparing of wood for building purposes, shipbuilding, furniture manufacture, and a variety of other uses forms one of the most important industries of the United States, Canada, and of some European countries. The industry, especially in America, is well organized, and is subdivided into—(1) logging, which includes the felling, cutting in lengths, and transporting to the mill; (2) sawmilling of the logs into rough timber, beams, joists, boards, and lathes; and (3) the planing of these. In the northern states and in Canada lumbering is chiefly carried on in winter.

Luminescence is the term applied to those cases in which a body gives out light without being hot. There are many varieties of this phenomenon. Thus, it may be set up by chemical action, such as the glow of phosphorus or of the fire-fly; or it may be caused by the action of both visible and invisible light, as in the case of the fluorescence of quinine solutions or the phosphorescence of luminous paint. Electric discharges are also a fruitful source of luminescence, causing it either by the bombardment of electrified particles, their disintegration, or by the radiations, such as X-rays, set up in the process. Luminescence is also caused by friction, as when sugar

is crushed; by heating, as when fluorspar is dropped on a hot plate; and in other ways.

Luminosity (*intrinsic*) is the amount of light emitted per unit of area of a shining body. It is due in most cases to the body being hot, an object becoming visible in the dark when between 400° and 500° C., bright red at about 900° C., and white at $1,200^{\circ}$ C. approximately. Most of the luminous bodies that owe their light to incandescence are in the solid state. This is obvious in the case of the incandescent gas lamps, in the lime light, and also in the electric arc, from which most of the light is emitted by the glowing ends of the carbon rods, but little coming from the intervening carbon vapour. Flames of burning hydrocarbons, as of coal gas or candles, also owe their luminosity to the incandescent solid particles of carbon set free from the compounds present; but in other cases, such as that of oxygen and hydrogen burnt under pressure, where solid particles cannot be present, and possibly in the case of burning hydrocarbons also, dense gases play a similar part. (See FLAME.) In comparing luminosities, the eye is not proportionally sensitive to the amount of light emitted. Thus, a surface giving out a hundred times as much light as another only appears about five times as bright. This difficulty is overcome by arranging the two sources at such distances as to equally illuminate areas in juxtaposition (equal luminosities being accurately comparable), when, in accordance with the law of inverse squares, light emitted by the two sources is in proportion to the square of their distances from the illuminated surfaces. Serious difficulties, however, are introduced if the lights are of different tints, and the standards are by no

means entirely satisfactory. See PHOTOMETRY.

Luminous Paint contains materials that become luminescent and throw out a feeble glow of different tints for some time after it has been exposed to sunlight, or other light rich in ultra-violet rays. The earliest of these substances was 'Bologna phosphorus,' which consisted of impure barium sulphide, obtained by heating barium sulphate with carbon. Canton's phosphorus, which is calcium sulphide similarly prepared, and the corresponding strontium sulphide, also act in the same way, the effect produced being largely dependent on the presence of traces of other substances such as manganese or bismuth. Balmain's luminous paint is stated to contain the latter element along with calcium sulphide.

Lumphinnans, vil., Fifeshire, Scotland, 1 m. w. of Lochgelly; has coal mines. Pop. 2,000.

Lumpsucker (*Cyclopterus lumpus*), a clumsily-built fish, common off the coasts of Scotland, N. Europe generally, and N. America. Its southern limit is the Bay of Biscay. The body is massive, and marked with tubercles and longitudinal ridges; the first dorsal fin is buried in a fleshy ridge in the back, while the ventral fins form a powerful sucker; the tail is short, and the fish is a poor swimmer, but it possesses the power of attaching itself firmly to rocks by means of the sucker. The breeding habits are interesting, for the male watches over the egg mass for several weeks. The lump suckers are bony fish, belonging to the family Discoboli.

Lumsden, SIR HARRY BURNETT (1821-96), British soldier, was quartermaster and interpreter to native troops in Afghanistan (1842); commandant at Peshawar (1849), and was at

Kandahar and Kabul during the Indian mutiny (1857-9). A born leader, he raised (1847), organized, and commanded the 'Queen's Own Corps of Guides,' which afterwards became a distinguished Indian regiment. See Lumsden and Elsmie's *Lumsden of the Guides* (1899).

Lunacy and the Lunacy Laws. The legal view of insanity is much more limited than the medical, since it includes only questions of life or property, competency and responsibility, and ability to transact the affairs of life. According to the law of England, the modern view is that whether a person is or is not a lunatic is in every case a question of fact. He may suffer from delusions, but be quite capable of making a will. His contracts are good, unless to the knowledge of the other party he was incapable of understanding what he was doing. He is criminally responsible for his actions, unless from defective mental power or from mental disease he cannot understand the nature of his acts, or does not know his act is wrong, or is unable to control his conduct—unless, in the last case, his want of control arises from his own fault.

In England lunatics are governed by the Lunacy Acts, 1890 to 1908. They may be received in (1) houses licensed by the Lunacy Commissioners, if within seven miles of London, and by the justices in quarter sessions elsewhere; (2) hospitals, which are places supported by voluntary contributions, and must be registered by the commissioners; (3) county or borough asylums for pauper lunatics. The councils of all administrative counties and county boroughs, and of certain other boroughs mentioned in the 4th schedule to the Lunacy Act, 1890, are bound to provide asylums for the requirements of

their areas. A lunatic may be received into a licensed house for not more than seven days on an urgency order, which is an authority given generally by a relative, and accompanied by a medical certificate authorizing the detention on the ground of urgency. But in ordinary cases a reception order is made by a county court judge, stipendiary magistrate, or specially appointed justice, on a petition by a relative of the lunatic, and a certificate by two medical men. A reception order is good for one year from its date, but can be renewed on a medical certificate. Orders for the discharge of a patient may be made by the person who petitioned for his detention, or by a visitor, or by the commissioners, and even a stranger can obtain an order for the special medical examination of a lunatic, with the leave of the commissioners. All lunatic asylums must be constantly visited without notice. The acts contain special provisions as to lunatics in private familia, and lunatics kept singly as patients.

There are ten commissioners in lunacy, four unpaid and six paid, of whom three are legal and three medical, appointed and removable by the lord chancellor. All lunatic asylums, public and private, are under their supervision and control.

The judge in lunacy and the masters in lunacy have the widest powers in respect of the management of a lunatic's property, in cases where the lunatic (1) has been so found by inquisition—i.e. where a formal inquiry by a master in lunacy, generally with a jury, has been held into the lunatic's state of mind; (2) is lawfully detained; (3) is incapable of managing his affairs, and this is proved to the judge in lunacy; (4) has less than £2,000 of property, and is proved to be a lu-

natic. When a person is found a lunatic by inquisition, the judge in lunacy appoints a committee of the person, who is responsible for the lunatic's comfort; and a committee of the estate, who is responsible for the management of his property. Criminal lunatics are governed by the Criminal Lunatics Act, 1800, the Criminal Lunatic Asylums Act, 1860, and the Criminal Lunatics Act, 1884. Asylums may, from time to time, be provided for the exclusive use of criminal lunatics. In England, criminal lunatics are detained at Broadmoor; in Ireland, at Dundern; and in Scotland, at Perth Penitentiary. The number of persons in England and Wales certified as insane and under care on Jan. 1, 1906, was 121,979; of these 91 per cent were pauper patients. On Jan. 1, 1859, the number of certified insane was 36,762; the increase therefore during the forty-seven years has been 232 per cent, while the increase of the general population during the same period has been only 75·4 per cent.

In Scotland lunatics are treated under the Lunacy (Scotland) Acts, 1857 and 1887. The procedure as to the reception and detention of lunatics is practically the same as in England. The sheriff is the judicial authority, and an urgent case is received into an asylum upon an emergency certificate, which is valid for only three days. The supreme administrative authority is the Board of Lunacy for Scotland, consisting of one unpaid and two paid commissioners. The office of the board is in Edinburgh. The property of lunatics in Scotland is simply and inexpensively managed by being placed in charge of a *curator bonis* appointed by the court. In Ireland the lunacy laws are similar to those of England. See also INSANITY; Archbold's *Lunacy* (4th ed. 1896);

and Wood Renton's *Law of and Practice in Lunacy* (1896).

Lunardi, VINCENZO (1759-1806), Italian aeronaut, secretary to the Neapolitan embassy, London; was one of the first to make a balloon ascent in England (1784).

Lunaria. See HONESTY.

Lund, city, co. Malmöhus, Sweden, on the Höjeå, 13 m. N.N.E. of Malmö; has a few industries—gloves, furniture, and iron-smelting. Here, in 1676, Charles XI. defeated the Danes; and here also the peace of 1679 was signed. Pop. (1911) 20,139.

Lund, TROELS FREDERICK (1840), Danish historian, historiographer royal and professor at the military school of Frederiksberg; has published important works on Scandinavian history, including *Historiske Skitser efter utrykte Kilder* (1876), and *Danmarks og Norges Historie i Slutningen af det 16 Aarhundrede* (1879-91).

Lunda, extensive territory of Central Africa, lying s. of the Belgian Congo, between the Kwango in the w. and the Lualaba in the e. It is drained mainly by the Kassai and its l. bk. tributaries. Formerly a Bantu empire, it is now divided between Portuguese W. Africa and Belgian Congo.

Lundenburg, tn., S. Moravia, Austria, on the Thaya, 35 m. s.s.e. of Brünn; formerly the Moravian capital. Pop. (1911) 8,521.

Lundy, small isl. lying off Barnstaple Bay, N. Devon, England, 12 m. N.N.W. of Hartland Point. Area, 1,150 acres. Pop. about 100. It has a lighthouse, and possesses ruins of remarkable towers, attributed to its De Marisco lords (c. 1100-1321).

Lüneburg, tn., Prussian prov. of Hanover, Germany, on the Ilmenau, a tributary of the Elbe, 26 m. s.e. of Hamburg. Manufacturers include chemicals, iron

wares, and carpets. Lüneburg was a member of the Hanseatic League, and was one of the richest towns in Germany at the time of the Reformation. Pop. (1910) 27,797.

Lunel, tn. in dep. Hérault, S. France, 14 m. E.N.E. of Montpellier; has trade in wines, brandy, and cattle. Pop. 7,500.

Lünen, tn., Prussia, in Westphalia, 7 m. N. of Dortmund; has iron-works and manufactures agricultural implements. Pop. (1910) 10,557.

Lunenburg, seapt. tn., in s. of Nova Scotia, Canada, the co. tn. of Lunenburg co., 40 m. s.w. of Halifax. Industries are fishing and shipbuilding. Pop. 4,000.

Lunette. (1.) A small vaulted aperture built in a large vaulted roof to admit light, examples being afforded by the upper lights in the nave of St. Paul's Cathedral. (2.) In fortification, a detached work with flanks or lateral wings built for the protection of roads and bridges.

Lunéville, tn., dep. Meurthe-et-Moselle, France, on Meurthe R., 15 m. s.e. of Nancy. The principal products are falence, linen, cotton, silk, hosiery, glass, railway material, and leather. The peace of Lunéville was signed here in 1801. Pop. 24,300.

Lung-chau, tn. and open port, Kwang-si, China, at the confluence of the Sung-chi and the Kao-ping rivers, near the Tongking frontier, opened to trade with the French colony in 1889. Pop. estimated at 13,000.

Lungs. — *Comparative.* — The lungs are hollow outgrowths from the anterior part of the alimentary tract, the proximal narrow portion of the outgrowth forming the windpipe or trachea. They form the characteristic respiratory organs of the air-breathing vertebrates. Except in some amphibians, the original cavity of the outgrowth becomes largely filled up by a spongy network,

which greatly increases the surface available for purposes of respiration, and gives to the organ its characteristic appearance. Lungs have apparently originated from the air or swim-bladder of a fishlike form, and thus afford an example of an organ which was primitively hydrostatic, and has secondarily acquired a respiratory significance. In the Dipnoi the swim-bladder is both functionally and structurally a lung, and is more complicated in structure than in certain of the amphibians. In a few amphibians, indeed, the lungs are entirely absent, the animals breathing by means of the highly vascular mouth-cavity. The higher Amphibia, like the reptiles, have well-developed lungs, which in the chameleon among lizards communicate with a series of air-sacs analogous to those which occur in birds. In birds the lungs are relatively small, and are bound down to the wall of the thorax. They are, however, in communication with an elaborate system of air-sacs, nine in number, which lie within the body-cavity, and are connected in their turn with other air-spaces within the bones, beneath the skin, and so on. In mammals generally the lungs resemble those of man.

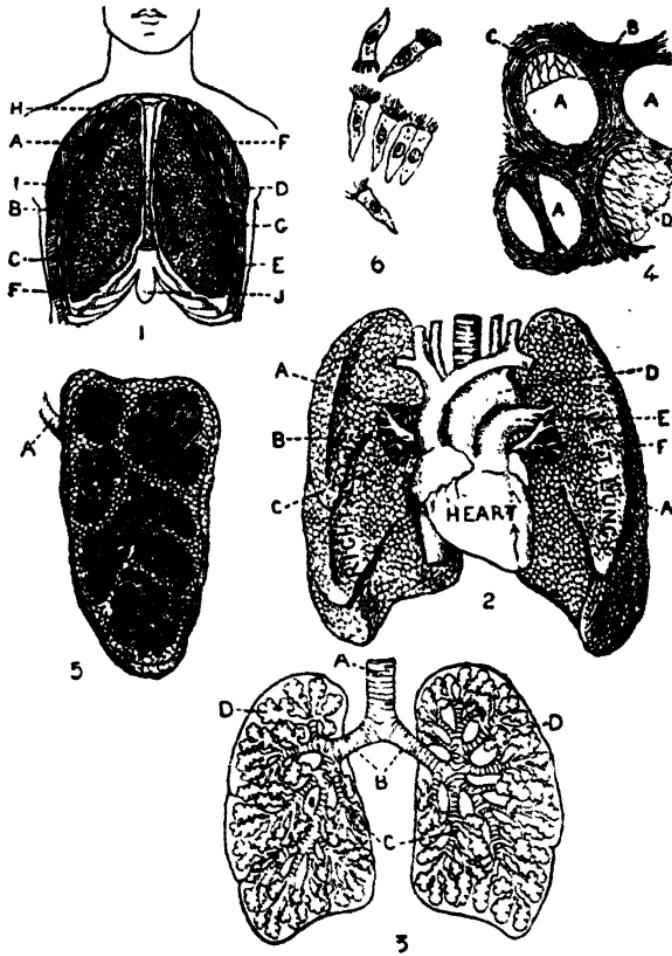
Anatomy.—The lungs are the principal organs of respiration, and are situated in the thoracic cavity. In colour they are pinkish gray mottled with black, and in shape each is conical, the apex lying in the root of the neck, while the concave base rests upon the diaphragm. They communicate with the external air by the trachea or windpipe, which bifurcates to form a right and a left bronchus, each of which divides and subdivides throughout the entire lung. The right lung is the larger and heavier, and is divided into three lobes—upper, middle, and lower. The left lung

has only two lobes, and is narrower than the right on account of the position of the heart, which lies between the two lungs, but inclines to the left side.

Externally each lung is covered by a double serous sac, the pleura. The outer surface of the outer layer of the pleura is adherent to the chest wall, and is called the parietal, or sometimes the costal layer; while the inner surface of the inner layer is closely adherent to the lung, and is known as the visceral or pulmonary layer. The inner surface of the parietal and the outer surface of the visceral layers are smooth and glistening, so that one can glide over the other during the movements of respiration. The interspace between the two layers is called the pleuritic cavity, but in health the two smooth surfaces are separated only by a little serous fluid, which acts as a lubricant.

The bronchi are circular cartilaginous tubes, which by successive subdivisions diminish until their diameter is only about one-fortieth of an inch, when they lose their circular form, and terminate in irregular passages, on the sides of which are the small air-sacs known as alveoli. The walls or septa between neighbouring alveoli contain much delicate elastic tissue, and carry the pulmonary capillaries, which are distributed in a very fine network with meshes smaller than the vessels themselves. The blood is thus spread over the alveolar walls in a thin layer, and is separated from the air contained in the alveolus only by the delicate capillary wall and the equally delicate epithelial cells which line the alveolus. All the alveoli communicate directly with the bronchioles, or ultimate divisions of the bronchi.

The blood supply to the lungs is double, one set of vessels, the bron-



The Lungs.

Fig. 1. Human thorax, anterior wall removed, showing lungs in position: right lung—
A, superior lobe; B, middle lobe; C, inferior lobe; left lung—D, superior lobe; E, inferior lobe;
F, F, pleura; G, mediastinum; H, clavicle; I, rib; K, sternum. **Fig. 2.** Lungs,
spread out: A, A, bronchi; B, right pulmonary vein; C, right pulmonary artery; D, arch
of aorta; E, left pulmonary artery; F, left pulmonary vein. **Fig. 3.** Diagrammatic
scheme of the lungs: A, base of trachea; B, bronchi; C, bronchial tubes; D, air cells
(alveoli). **Fig. 4.** Alveoli: A, A, alveoli; B, elastic trabeculae; C, epithelium; D, alveolar
wall with capillaries. **Fig. 5.** Lung of reptile (tortoise): A, trachea. **Fig. 6.** Cells of ciliated
epithelium.

chial, being nutritional, while the pulmonary vessels are concerned with the process of respiration, and are therefore functional. The bronchial arteries are comparatively small. Springing from the thoracic portion of the aorta they accompany the bronchial tubes, and supply with arterial blood the lung tissue and bronchial glands as well as the bronchi themselves. The pulmonary artery is a large vessel which carries impure blood from the right ventricle of the heart. Like the trachea, it bifurcates, and the right and left divisions pass to their respective lungs with the bronchi which they accompany, dividing and subdividing in similar fashion until they terminate in the dense capillary network round the alveoli. The pulmonary blood, after being purified in the alveolar capillaries, returns to the heart by four pulmonary veins. The pulmonary lymphatics are numerous. The pulmonary nerves arise from plexuses, which are chiefly formed by branches from the vagi and from the sympathetic system.

Physiology. — All living cells require oxygen for their nourishment, and for the continuance of life the blood must constantly renew its supply of oxygen, and at the same time part with the carbon dioxide which it has washed out of the tissues. The red cells of the blood are the carriers of oxygen, which unites temporarily with the haemoglobin contained in these cells, and gives arterial blood its characteristic bright red colour, venous blood being dark and purplish. In pulmonary respiration the act of inspiration is effected by enlargement of the thoracic cavity, through the muscular contraction of the diaphragm and the intercostal muscles which stretch from rib to rib. The lungs play a passive part in inspiration. Being practically

elastic bags, they follow the treating chest walls and floor, with the result that air is drawn in through the trachea. In the expiration of ordinary breathing, the diaphragm and intercostals being relaxed, the elasticity of the lung causes it to contract, and drives out some of the contained air. In ordinary breathing about 30 cub. in. of tidal air pass in and out of the adult lung at each respiration, but an additional 100 cub. in. of supplemental air can be expelled by forced expiration. There remains about 100 cub. in. of residual air, which no effort can drive out of the lungs. At the end of ordinary inspiration the lungs thus contain about 230 cub. in. of air, to which a further 100 cub. in. of complementary air can be added by a deep-drawn, prolonged inspiration. In ordinary breathing the tidal air is only about one-eighth of the total contained in the lung, the remaining seven-eighths being stationary. Expired air differs from inspired in being warmer, moister, and in having about 5 per cent. more carbon dioxide and 5 per cent. less oxygen. About 400 cub. ft. of air pass through the lungs of an adult in twenty-four hours, in which time about 9 oz. of water and 8 oz. of carbon in the form of carbon dioxide are exhaled. In ordinary breathing the respiratory act occurs about eighteen times per minute, but exertion and exposure to cold accelerate the breathing, and at the same time hasten the movements of the heart, so that a greater volume of blood is poured through the lungs per minute. The nervous centre for respiration is situated in the medulla oblongata, and appears to be chiefly stimulated by venous blood. Until recently deficiency of oxygen was believed to stimulate the centre, but it is more probable that the active

agent is free carbon dioxide in the blood which bathes the nerve cells. When the blood, therefore, is sufficiently charged with carbon dioxide to irritate or stimulate the respiratory nerve cells, or to paralyze controlling cells which inhibit them, impulses are transmitted to the inspiratory muscles, whose contraction replaces the excess of carbon dioxide by a fresh supply of oxygen. Other stimuli, however, act upon the centre; thus cold water dashed upon the chest causes strong involuntary inspiration, and within certain limits both inspiration and expiration are under voluntary control.

Pathology.—Most of the diseases of the respiratory apparatus are described in special articles. (See ASTHMA, BRONCHI, CIRRHOSIS, EMPHYSEMA, PHTHISIS, PLEURISTY, PNEUMONIA.) Injuries of the lung are most frequently due to penetrating wounds of bullets or of cutting instruments, but not uncommonly the ragged end of a broken rib lacerates the underlying lung. In all such cases there is risk of air getting into the pleural cavity, either from the wound in the chest wall or from that in the lung. Air in the pleural cavity (pneumothorax) is generally accompanied by a certain amount of fluid. Should the fluid be serous, the condition is known as *hydro-pneumothorax*, while a mixture of air and pus is called *pyo-pneumothorax*. *Gangrene* of the lung is a rare disease, and usually occurs only in the debilitated. *Abscess* may be primary, and may follow a wound or suppurative disease in a neighbouring organ; thus, an abscess of the liver may perforate the diaphragm and lead to abscess of the lung. More common, however, are multiple abscesses due to such a disease as pyemia. Various circulatory derangements affect the lungs. *Active congestion*

is usually associated with other diseases, such as pneumonia. *Passive congestion* may be obstructive, and is common in disease of the left side of the heart; or it may be hypostatic, when from general debility the posterior and basal parts of the lungs become engorged with blood and serum. A not uncommon condition, known as *pulmonary apoplexy*, or *hemorrhagic infarct*, results from the blocking of a branch of the pulmonary artery. See West's *Diseases of the Organs of Respiration* (2nd ed. 1909).

Lungwort, a name given to members of the genus *Pulmonaria*, a division of the order Boraginaceæ. They bear terminal cymes of bluish flowers, with tubular five-cleft calyces and funnel-shaped corollas. *Pulmonaria officinalis* was at one time used as a cure for lung diseases. It is a somewhat rare British native. Other species are *P. angustifolia*, the blue cowslip, and the pink-flowered *P. saccharata*.

Lupercalia was an ancient Roman festival held most probably in honour of the god Mars, the wolf, and fructification, on the 15th Feb. every year, at the foot of the Palatine Hill. Here the Luperci on the day of the festival sacrificed goats and young dogs; and after various ceremonies, cut up the goat skins, part of which they put on their own bodies, and part they made into thongs, with which they ran along the line of the old Pomerium of the original Palatine city. The meaning of the rite is still in question, and the whole subject bristles with difficulties. The rite was continued so late as 494 A.D., when the Pope changed it to one in honour of the Purification of the Virgin Mary. See Marquardt and Mommsen's *Handbuch der Römischen Alterthümer* (1871-88), Murray's *Mac-*

ual of Mythology (1873), and W. Warde Fowler's *Roman Festivals* (1908).

Lupine, a genus of leguminous plants, mostly natives of America, many of which are valued as hardy herbaceous plants in our gardens. The flowers are generally blue or purple, and are most commonly borne in terminal racemes or whorls. The leaves are usually of great beauty, being digitately manyfoliated. Our garden lupines are mostly hybrids. Among the species are *L. polyphyllus*, a tall-growing perennial, bearing dark-blue flowers; *L. luteus*, a yellow flowering annual; *L. mutabilis*, white and blue, almost a shrub in habit; *L. nanus*, a Californian dwarf-growing annual, with bluish flowers in summer; *L. subcarnosus*, a dwarf-growing perennial with downy stem, and deep-blue flowers marked with yellow; and *L. nootkatensis*, a variegated-flowered perennial, with hairy leaves.

Lupplia or **LUPPIA**, ancient name of the river Lippe.

Lupton, THOMAS GOFF (1791-1873), English engraver, was one of the engravers employed by Turner on the *Liber Studiorum*, and also executed plates for *The Harbours of England* (1856), the letterpress being contributed by Ruskin. Notable plates by him are *The Infant Samuel*, after Reynolds, and *The Eddystone Lighthouse*, after Turner. Lupton was the first to substitute steel for copper in mezzotint engraving.

Lupulin. See HOPS.

Lupus (Lat. *lupus*, 'a wolf') is a term applied to a group of chronic skin diseases characterized by cortical overgrowth followed by ulceration. The cause is now recognized to be tubercular infection of the skin. The disease generally commences as a dull red translucent tubercle, or group of tubercles, raised above the surface and gradually increasing in area.

The disease is most common in children and females. Until comparatively recent years lupus was almost incurable. Koch's tuberculin has been used with excellent results, and more recently X and other light rays have achieved even greater success. Much of the credit of the method of treatment by light rays is due to Finsen, the Danish doctor.

Lupus, an ancient southern constellation east of Centaur. Alpha Lupi is a helium star of 2.9 magnitude; γ, λ, μ, π, and Η A 103 Lupi are all closely double; while β Lupi is a spectroscopic binary.

Luray, tn., cap. of Page co., Virginia, U.S.A., 95 m. N.N.W. of Richmond, is renowned for its beautiful stalactitic cavern, discovered in 1878. The town has mineral springs, a tannery, and flour mills. Pop. 1,200.

Lurcher, THE, a cross between the greyhound and a sheep dog, and is essentially a poaching animal. Gifted with wonderful instinct, of the keenest sight, scent, and hearing, it enters into the avocations of its master with a perfect knowledge of the duties required of it. There are no registered 'points' for a lurcher, and the Kennel Club does not include it as a recognized variety.

Lure, tn., France, in Haute-Saône, 18 m. w. by n. of Belfort; formerly the seat of a famous abbey. Pop. 6,500.

Lurgan, tn., Co. Armagh, Ireland, 20 m. s.w. of Belfast, and 3 m. s. of Lough Neagh; manufactures linens, chiefly cambric, diaper, and lawn, as well as tobacco. Pop. (1911) 12,135.

Luria, or **LORIA**, ISAAC (1534-72), one of the famous 'Five Sages' of the 16th century, chief rabbi of Lublin, was born at Jerusalem. His works are of importance on account of the numerous notices they contain

connected with the history of Jewish literature. His *Hokhmah Shelomoh* discussions on the Babylonian Talmud, Rashi, and the Tosaphoth is now an integral part of the Talmud editions.

Lusatia, or **LAUSITZ**, region between the Oder and Elbe, and consisting of Upper and Lower Lusatia. It originally belonged to Bohemia (1319), but in 1635 was taken by Saxony, with whom it remained till the Congress of Vienna (1815), when Lower Lusatia and part of Upper Lusatia were ceded to Prussia.

Lushai Hills, imperfectly explored tract of country on N.E. frontier of Eastern Bengal and Assam, India, occupied by a tribe known as Lushai, a warlike race who are a branch of the Kuki family. In 1890 their country became British. The area is est. at 7,230 sq. m. and the pop. at 82,000.

Lu-shun-kau. See **PORT ARTHUR**.

Lusignan, tn., dep. Vienne, France, on river Vonne, 15 m. s.w. of Poitiers. The Lusignan family furnished kings to Jerusalem and Cyprus during the crusades. Pop. 2,200.

Lusitania, originally the name of the territory of the ancient Spanish tribe the Lusitani. The Roman province of Lusitania roughly corresponded with the modern Portugal. The chief town of the Lusitani was Olisipo (Lisbon), but Emerita Augusta (Merida) was the Roman capital. See Mommsen's *Hist. of Rome* (Eng. trans. 1894), and his *Provinces of the Roman Empire* (Eng. trans. 1886).

Lusk, par. and vil., Ireland, in co. of and 12 m. N. by E. of Dublin. Pop. 3,800.

Lussin, or **LOSSINI**, isl. of Austria, in the Gulf of Quarnero, Istria, about 44° N. lat. Length, 22 m.; breadth, 3 m.; pop. (1911) 12,947. Chief town, Lussinpic-

colo (pop. 1911, 8,341); has a good harbour, and is visited as a summer resort.

Lustenau, tn., Vorarlberg, Austria, on the Rhine, 4 m. s. of the s. end of Lake Constance. Pop. (1911) 8,381.

Lustre, in physical optics, is a characteristic appearance of certain substances when viewed in ordinary light. Thus, there is the metallic lustre possessed by most, though not all, metals. The effect depends upon the manner in which the incident light is partly absorbed and partly sent back after a slight penetration into the surface layers. What it exactly consists of is not clearly understood. In pearly lustre, again, we have to deal with a peculiar surface condition, producing to a marked extent the phenomenon of diffraction. In the case of transparent or translucent bodies, like precious stones and crystals generally, the lustre must be largely conditioned by the refractive power of the substance.

Lustrum ('a lustre') properly means a purification; in particular the purification of the whole Roman people, which took place on the completion of the census. As this occurred every fifth year, the term *lustrum* came to mean a period of five years. The *lustrum* was said to have been instituted by Servius Tullius (566 b.c.). The last *lustrum* took place 74 A.D. See Marquardt and Mommsen's *Handbuch der Römischen Alterthümer* (1871-82).

Lute, a stringed instrument of Asiatic origin, popular for centuries, but now obsolete in Europe, though music for the instrument was published so late as 1760. The lute resembled the present form of mandoline in having a pear-shaped convex back built up of staves of various kinds of wood, a flat breast—usually of pine—a bridge, a fretted finger-board, and strings tuned in pairs

of unisons; but it differed from the mandoline in having from one to three sound-holes in the breast, in being sounded by plucking the strings with the thumb and fingers instead of striking them with a plectrum, and in having in some forms additional strings which were not fingered, but only sounded the notes to which they were tuned. The strings varied in number, according to the type and size of the instrument. The archlute, chitarrone, and theorbo were all large forms of double-necked lutes, having the neck extended to contain another set of pegs regulating unstopped strings which ran alongside and not above the finger-board. Music for the lute was written in a form of notation termed 'tablature.'

Lutes are cements used for making the joints of certain apparatus air-tight. Innumerable formulae for such compositions are extant, and differ according to whether the joint requires to be heated, to withstand pressure, or to be readily undone. Linseed meal and water, whiting and linseed oil (putty), and red or white lead and linseed oil, are examples of lutes that will not stand heat; whilst Stourbridge clay and water and fire-clay and sodium silicate solution will resist its action.

Lutetia, or in full **LUTETIA PARISIENSIS**, 'the city of the Parisii,' was the ancient name of Paris, France.

Lütgendortmund, tn., Prussia, in Westphalia, near Dortmund; has coal mines. Pop. (1910) 14,984.

Luthardt, CHRISTOPH ERNST (1823-1902), Lutheran theologian, was born at Maroldweisach, Franconia, and became professor at Marburg (1864), and two years later at Leipzig, where he died. His works display a clear and well-informed mind, and have enjoyed a vast popularity. The most important are his *Apologie*,

...des Christentums (1864-80; Eng. trans.), *Das Johanneische Evangelium* (1852-3; Eng. trans.), *Die Lehre von den letzten Dingen* (1861), *Kompendium der Dogmatik* (1865). He also edited the *Allgemeine Evang.-Luther. Kirchenzeitung* (with the *Theol. Litteraturblatt*), and the *Zeitschrift für Kirk. Wissenschaft u. Kirk. Leben*. See his autobiography, *Erinnerungen aus Vergangenen Tagen* (1889), and *Life*, in German, by Kunze (1903).

Luther, tn., Canada, in Ontario, 50 m. w.n.w. of Toronto. Pop. 4,000.

Luther, MARTIN (1483-1546), the leader of the Protestant reformation in Germany, was the son of Johann Luther, originally a peasant-proprietor at Möhra, near Eisenach, Thuringia, who migrated to Eisleben, in Saxony, where the reformer was born on St. Martin's Eve (November 10). In 1497 Martin was sent to a Franciscan seminary at Magdeburg, and in the following year to Eisenach. In 1501 he took residence at the University of Erfurt, as a student of law, read widely in the classical and scholastic authors, and gained his bachelor's and master's degrees in 1502 and 1505 respectively. He entered the convent of the Augustinian monks at Erfurt, July 17, 1505. In the convent he submitted to the most stringent discipline, and in course of time resumed his reading, pondering especially over the fathers and the Bible; but in spite of fasts, vigils, and unremitting industry, he failed to gain the peace of mind he craved for, and fell into a state of morbid melancholy. From this he was eventually delivered through the sympathy of Staupitz, vicar-general of the German Augustinians, and, coming to better views of the divine mercy, was ordained priest in 1507. He left Erfurt in 1508 for a chair in the newly-founded

University of Wittenberg (though he still remained a monk and lived in a cell), and here his preaching began to attract attention. In company with John of Mecheln he made a journey to Rome in 1511, and had his eyes opened to the degrading evils which underlay the specious piety of the church. Returning in 1512, he took his degree of doctor of theology, and henceforth his approach to fame was rapid. His expositions of the Bible were listened to by students from all parts; his study of Augustine and the mystics, but especially his use of plain, nervous, vernacular speech gave a fresh and striking tone to his discourses. He began to issue his works, and in 1516 became superintendent of eleven Augustinian convents. About this time there came to the Wittenberg district the Dominican monk Tetzel, selling pardons and releases from purgatory, in accordance with the indulgence issued by Pope Leo X. Luther refused to absolve some of Tetzel's customers; but as the chicanery continued, he took the decisive step of nailing to the church door at Wittenberg his ninety-five theses in Latin, as a public protest against the Pope's emissary. This was on October 31, 1517, which may thus be reckoned the birthday of the Reformation. The news of all this reached the Pope through the archbishop of Mainz, the patron of Tetzel; and Luther, still regarding himself as a true son of the church, sent his *Resolutiones* (a defense of his theses) to the church's head. Urged by the Dominican Maasolini, the Pope summoned Luther to Rome; but in deference to the wishes of the Elector Frederick of Saxony and the emperor, the place of rendezvous was changed to Augsburg (1518), where the papal legate Cajetan, after vainly demanding from Luther a formal recantation,

dismissed him in great anger. Luther gained delay by an appeal to a general council of the church, but the celebrated Dr. Eck forced his hand by challenging him and Carlstadt to a public disputation at Leipzig (1519). Eck reduced Carlstadt to silence, and so far succeeded with Luther as to force him into a position of more accentuated opposition to Rome. The chief result of the debate was Luther's publication of the famous treatises *An Address to the Nobility of the German Nation*, *On the Liberty of the Christian Man*, and *The Babylonian Captivity of the Church* (1520), which won to his side men like Ulrich von Hutten (Melanchthon had already joined him) and practically all the patriotism of Germany. Meanwhile a papal bull condemning Luther was published in Germany; but Luther's rejoinder was to burn it openly in Wittenberg, along with the decretals which declared the Pope's supremacy (December 1520). Towards the close of the same year, the recently-elected Emperor Charles V., at his first Diet at Worms, received command from Rome to execute the bull; but a strong party successfully pleaded delay, and Luther was summoned to meet the diet on April 16, 1521. He accepted the challenge, and declared he would go to Worms 'were there as many devils there as tiles on the houses.' He retracted nothing, and the emperor was ready to pronounce sentence, but was again withheld by the electors and princes. After the formal close of the diet, however, the edict of condemnation was passed by trickery. But before any attempt could be made to execute it, Luther had been kidnapped by his friendly elector, and conveyed to the castle of the Wartburg. Here he resumed his writing of books and pamphlets, and completed a transla-

tion of the New Testament into German (published Sept. 21, 1522, with illustrations by L. Cranach; the Old Testament was not finished till 1534). In March 1522 he was in Wittenberg again, preaching, travelling, and publishing with unabated zeal. But the seeds of reform already sown were now springing up of themselves on every side. Several princes, free cities, and other towns took sides with the new teaching, and it almost seemed as if a mighty transformation was to be realized by relatively peaceful means. But events proved the falsity of the anticipation. The free nobles, smarting under the insolent oppression of the princes and the hierarchy alike, took up arms under Franz von Sickingen; but the movement was soon suppressed, and its leader slain. The Peasants' war (1524-5) was a much more serious affair. The labouring classes, groaning under the taxation of the nobles and the church, gave ready ear to Luther's assertion of the equal freedom and value of all men in God's sight, and under Thomas Müntzer raised the standard of revolt against the governing powers generally. The excesses of the insurgents called forth some of the most violent language Luther ever uttered. In 1525 he married Katharina von Bora, an emancipated nun. By his hymns (both words and music), by the institution of schools, and the drawing up of catechisms, he deepened the devotional and educational aspects of the Reformation, and fixed its principles in the hearts and lives of the people. But his polemics were not yet at an end. When Henry VIII. of England attacked him in a bitter tractate (1522), Luther had been ready with a not less caustic reply; when Erasmus in 1524 directed against him the *De libero Arbitrio*, Lu-

ther's *De servo Arbitrio* had given more than a Roland for an Oliver; and now he fell out with his old friends Carlstadt and Zwingli regarding the sacraments, and at a conference at Marburg (1529) rejected all proposals of peace with the latter. The emperor was still of a mind to crush the whole movement for his own ends, but at Speyer (1529) and Augsburg (1530) the defiant attitude of the princes again withheld him. Luther's labours as author, organizer, and adviser of nobles continued to the end, but his last years were clouded by ill-health. In 1546, on a journey undertaken to bring about a reconciliation in the family of the counts of Mansfeld, his wasted frame succumbed at Eisleben. Luther is fitly reckoned by Carlyle among the 'heroes' of the race. His was a brave, strong, altogether healthy nature; he combined a penetrating insight into facts, lofty courage and indefatigable energy in dealing with them, and a sincere and simple piety. Unlike many reformers in church and state, he had both humour and common-sense.

Among the numerous biographies are those of Melanchthon, Michelet (1835; trans. by Hazlitt, 1846), Koestlin (1875; trans. 1883), Freytag (1883; trans. in America), Koldé (1884-93), Hausrath (1904, etc.), and T. M. Lindsay (1903). His *Sämtliche Werke*, in 67 vols., were published at Erlangen (1826-57); re-issue Weimar from 1883; people's ed. 1892; *Briefe*, ed. De Wette (3 vols. 1825-8); *Table Talk* (1883).

Lutherans, a name said to have been first applied to the followers of Luther by Dr. Eck, and now given to those sections of Protestantism which claim most faithfully to represent the principles of the reformer; hence often used in contradistinction to the Reformed Church (Swiss, Anglican, Scottish Presbyterian,

etc.). The most general difference between the two communions was that, whereas the Lutherans laid the chief emphasis upon the substantive principle of the reformation—viz., the doctrine of justification by grace through faith—the Reformed Church took its stand upon the formal principle—viz., the regulative authority of Scripture. The first Lutheran university was founded at Marburg (1527). The conference at Marburg (1529), summoned in order to bring about a mutual understanding between the parties, resulted in failure, chiefly owing to the obduracy of Luther; and from this point the two sections drifted further and further apart. Melanchthon designed to obtain a basis wide enough for friendly co-operation between Catholicism and both divisions of Protestantism (*e.g.* in the Augsburg Confession of 1540); but this was declared to be open treachery by the extreme Lutherans, who thereupon removed their chief centre from Wittenberg to Jena. After various bitter controversies, the Osiandrian (1549–67), the Crypto-Calvinistic (1552–6), the Synergistic (1555–7), and the conflict regarding predestination (1574–77), unity was restored among the Lutherans by the general acceptance of the Formula of Concord (1580), and from that time their community enjoyed a century of peace and success. It had already extended its domain to Denmark and the rest of Scandinavia, Poland, the Baltic provinces of Russia, and Holland. But its supremacy in Germany was marked by the growth of a new scholasticism, a tendency to rest satisfied with mere doctrinal orthodoxy—a spiritual stupor, the much-needed awakening from which was given by the Pietistic movement; the *Aufklärung* also helped to rouse it to strenuousness. In 1817, the tercentenary

of the Reformation, King Frederick William III. of Prussia proposed and carried through a scheme of union between the Lutheran and Reformed parties; but certain irreconcilables among the former protested, and ultimately formed an independent body (1841), the Old Lutherans, who are now, however, recognized by government. In Scandinavia the Lutheran Church is episcopal, but in its home-land the place of bishops is taken by the consistory. The more recent works on Lutheran theology are those of Luthardt, Kahnis, Hase, Nitsch, Martensen; on ecclesiastical government, those of Hinschius and Friedberg. For the Lutheran Church in the United States, see those of Schenucher, Mann, and Hazelius.

Luton (anc. *Luytone* or *Lygetune*), inunc. bor., mrkt. tn., and parish in Bedfordshire, England, on the Lea, 30 m. N.N.W. of St. Paul's. The Plait Hall is the great market for the sale of the straw plait made by the women of the town and district. Other local industries are brass and iron works, motor car works, and the manufacture of felt hats. Pop. (1911) 50,000. See Davis's *History of Luton* (1855).

Lutsk, tn., Volhynia gov., S.W. Russia, 150 m. w.n.w. of Zhitomir, at the junction of the Gijtsa with the Stir. It has manufactures of cloth, glass, and paper. Pop. 17,000.

Lutterworth, mrkt. tn., Leicestershire, England, 13 m. s. by w. of Leicester. The church of St. Mary is an ancient building, and the old oak pulpit is in part that from which Wycliffe (rector here, 1374–84) first preached the reformed doctrines. Pop. (1911) rural dist. 9,932.

Lüttich. See **LIEGE**.

Lüttringhausen, tn., Rhine prov., Prussia, 5 m. s.e. of Elberfeld; manufactures ironmongery,

cotton goods, and [brandy]. Pop. (1910) 13,559.

Lützen, tn., prov. Saxony, Prussia, 12 m. w.s.w. of Leipzig; is noted for its two battles—the first fought on Nov. 6, 1632, between Gustavus Adolphus of Sweden, who was killed, and the Austrians under Wallenstein. The second battle (often called Gross Görschen) took place on May 2, 1813, when Napoleon I defeated the combined Russian and Prussian forces. Pop. (1910) 4,082.

Lützow, LUDWIG ADOLF WILHELM, FREIHERRE VON (1782-1834), Prussian general, was empowered in 1813 to raise the corps of free-lances which subsequently bore his name. This body of patriots, clad in black (hence the designation 'Black Troop'), and numbering less than 500 cavalry and 3,000 foot, made for itself a notable name in the Napoleonic wars. In 1889 an infantry regiment of the German army, which traced its origin to Lützow's corps, received his name. See K. von Lützow's *Adolf Lützows Freikorps in den Jahren 1813 und 1814* (1884), and Jagwitz's *Geschichte des Lützowschen Freikorps* (1892).

Luxembourg, prov., Belgium, in the extreme S.E., covered in great part by the wooded plateau of the Ardennes. Iron, marble, granite, and slate are found, and iron wares, cattle, leather, and cloth are produced. Area, 1,700 sq. m. Pop. 226,000. Chief town, Arlon, 70 m. s. by E. of Liège.

Luxembourg, FRANCOIS HENRI DE MONTMORENCY-BOUTEVILLE, DUC DE (1628-95), took part in the wars of the Fronde, but pardoned (1659), was subsequently created Duc de Luxembourg. Given a command against Holland in 1672, he defeated the Dutch, and finally carried out a magnificent retreat from Utrecht. He defeated William III. of Eng-

land at Leuze (1691), at Steenkirk (1692), and at Neerwinden (1693). See Beaumain's *Histoire Militaire du Duc de Luxembourg* (1756), and *Mémoirs... écrits par lui-même* (1758).

Luxembourg Palace. See PARIS.

Luxemburg. (1.) Formerly Lützelburg, independent grand-duchy of Europe, but included for commercial purposes in the German customs union, is situated between France, Belgium, Lorraine, and Rhineland. Area, 997 sq. m.; pop. 247,000. The people are almost entirely Roman Catholic, and of Germanic descent. The grand-duchy forms a low plateau (1,800 ft.), intersected by several valleys, and is drained by the Moselle and its tributary the Sauer (Sure). The chief crops are cereals, flax, hemp, rape-seed, and the vine. Meadows and grass cover 15 per cent. of the area, and forests 29 per cent. The mining and smelting of iron ore form one of the most important occupations. Gloves, leather, pottery, paper, cloth, beer, sugar, and vinegar are manufactured. The grand-duke is a constitutional sovereign, and is assisted by a Chamber of Deputies. The history of the state begins with the countship of Lützelburg, founded in the 10th century, and converted into a duchy in 1354. In 1444 Luxembourg was united with Burgundy, in 1555 with Spain (but at the same time accounted as a state of the empire), in 1659 in part with France, in 1713 again with the empire, and in 1797 once more with France. In 1815 it was made a member of the German Confederation, although linked by personal union with the crown of Holland. On the death of William III. of the Netherlands in 1890, the grand-duchy descended to Adolphe, Duke of Nassau (1817-1905), who was succeeded as grand-duke by his

son William (b. 1852). (2.) Capital of above grand-duchy, 35 m. N. of Metz. It is a picturesque town, crowning a rocky peninsula above the little river Alzette, with three industrial suburbs—Pfaffenthal, Grund, and Clausen—at its feet. It was stormed or captured by the Burgundians in 1443, by the French in 1479, 1542, 1684, and 1796. The industries include tanning and the manufacture of gloves, pottery, vinegar, and machinery. Pop. 21,000. See T. H. Passmore's *In Further Ardenne* (1905), and H. Philips's *Das Luxemburger Land* (1895).

Luxeuil (anc. *Lixorium*), tn., dep. Haute-Saône, France, at foot of Vosges Mts., 27 m. N.W. of Belfort; has mineral springs. Cotton-spinning, and lace-making are carried on. Pop. 5,500.

Luxor. See THEBES.

Luxilian, par. and vil., Cornwall England, 5 m. S. by W. of Bodmin; has famous granite quarries, and gives name to a porphyritic rock (luxilianite) which occurs in large isolated blocks. Pop. 1,500.

Luynes (or *LUINES*), CHARLES D'ALBERT, DUQ DE (1578-1621), constable of France, who instigated Louis to crush the Huguenots in the south. Luynes failed to take Montauban, their chief stronghold (1621). He was successful, however, at Montheur, but died at the moment of victory.

Luz, the name of two places in Palestine. The first was a village close to Bethel (Gen. 28:19); the second was in the country of the Hittites (Judg. 1:23).

Luzan, IGNACIO DE (1702-54), Spanish scholar, man of letters, and founder of the French school in Spain. He was the first to publish in Spanish some of Milton's verse. His 'Art of Poetry' (*La Poetica o Reglas de la Poesia*, 1737), is his principal work. See Ticknor's *Hist. of Spanish Litera-*

ture, vol. iii. (1849), and Alcalá Galiano's *Historia de la Literatura* (1845).

Luzern. See LUCERNE.

Luzerne, tn., Luzerne co. Pennsylvania, 2 m. N. of Wilkes-Barre; has flour mills and coal mines. Pop. (1910) 5,426.

Luzon, or LUZON, the most N. of the large islands, and the second in size of the Philippine Archipelago. Area 43,075 sq. m.; pop. 3,800,000. It consists of coastal plains and a central mountainous district, among which fertile valleys occur. Several volcanoes are still active, including Mayon (7,560 ft.) and the Taal. The highest mountains and the largest rivers are in the N. of the island; in the S. there are several fresh-water lakes. The soil is admirably adapted for the culture of tobacco, sugar, rice, and manilla hemp. The chief minerals are copper, gold, asphalt, clays, coal, iron, lead, marble, salt, and zinc. The bulk of the population is of mixed Malay, Chinese, and Latin stock, with a slighter infusion of Indonesian blood; but the tribes in the hills are of the Negrito or of mixed Negrito and Indonesian origin. Manila, the cap. is in the S.W. of the island.

Luzula, a genus of plants, order Juncaceæ. They have flat, grasslike leaves, covered with long white hairs, a brownish chaffy perianth of six parts, six stamens with yellow anthers, and a one-celled capsule containing three seeds. Among the British species are *L. sylvatica*, the great wood-rush; *L. campestris*, the field wood-rush; and *L. pilosa*, the hairy wood-rush.

Luzzara, tn., Italy, in Lombardy, 22 m. N.E. of Parma. Pop. (comm.) 9,000.

Luzzatti, LUIGI (1841), Italian statesman and jurist, of Jewish origin, born at Venice; became professor of constitutional law at Padua (1867), and at Rome (1900).

He entered Parliament (1871), and became a recognized authority on financial and commercial matters. He was minister of the treasury (1891-2 and 1896-8), when he organized the finances of Italy on a sound basis. In 1906 he was again appointed minister of the treasury. Amongst his books are *Emulazioni e Progressi delle Banche di Emissione in Italia* (1886); *Cronaca delle Cooperazioni* (1888); and *L'Abuso del Credito e la Finanza Italiana* (1889).

LXX. (abbreviation for *Septuaginta*), the Septuagint, the most ancient version of the Old Testament (Greek). See **BIBLE** and **SEPTUAGINT**.

Lyakov. See **NEW SIBERIA ISLANDS**.

Lyall, Sir Alfred Comyn (1835-1911), English administrator and author, born at Coulston, Surrey; was lieutenant-governor of the North-West Provinces, India (1882-7), and was appointed a member of the council of the Secretary of State for India (1888). He was Ford Lecturer in English History, Oxford University, 1908. Among his works are *The Rise of the British Dominion in India* (3rd ed. 1905), *Asiatic Studies* (1882-99; 2nd ed. 1893), *Warren Hastings* (1889), *Tennyson* (1902), and *Life of the Marquis of Dufferin* (1905). His administrative work is noticed in *Lord Roberts's Forty-one Years in India* (1897).

Lyall, Edna (d. 1903), pseudonym of Ada Ellen Bayly, English novelist; a native of Brighton, whose first published work, *Won by Waiting* (1879), met with little success, although *Donovan* (1882) and its sequel *We Two* (1884) at once attracted a large reading public. Her other works include *In the Golden Days* (1885), *Knight Errant* (1887), *A Hardy Norseman* (1889), *Derrick Vaughan* (1889), *Doreen* (1894),

and *The Hindooers* (1902). See *Life* by Payne (1903) and by Escreet (1904).

Lycanthropy (Gr. *lykos*, 'a wolf'; and *anthropos*, 'a man') is the peculiar power once attributed to certain people, of assuming the character and the appearance of wolves. Such men were called 'lukanthropoi' (Gr.), 'loups-garous' (Fr.), 'werewolves' or 'men-wolves,' 'turnskins,' and 'shape-changers' (Eng.). The term lycanthropy is not restricted to its literal meaning, but includes the power of assuming any animal shape—usually that of wolves, dogs, and bears. In Norway the belief still exists that the Lapps have the faculty of turning themselves into bears. There are numerous traditions in Europe of werewolves. The origin of the belief in lycanthropy is very ancient and very obscure. See S. Baring Gould's *Werewolves* (1885), and J. C. Lawson's *Modern Greek Folk-lore and Ancient Greek Religion* (1910).

Lycaon, in ancient Greek legend, a king of Arcadia, the son of Pelasgus, of whom it is related that he was the first civilizer of Arcadia, and that he was turned into a wolf because he offered human sacrifices to Zeus. The various accounts are given by Apollodorus, Dionysius of Halicarnassus, Ovid (*Metam.* i.), and Pausanias.

Lycaonia, ancient district of Asia Minor, bounded by Galatia on the N., Cappadocia on the E., Cilicia on the S., Isauria and Phrygia on the W. Its chief cities were Derbe, Iconium (the capital), Lystra, and Laodicea. It became a separate province in 373 A.D., and now forms part of Konia vilayet. See Wilson's *Asia Minor* (1895); Ramsay's *Historical Geography of Asia Minor* (1890).

Lycaste, a genus of tropical American orchids. The flowers

are characterized by a transverse appendage at the middle of the lip. The species include *L. Depperi*, with pale greenish flowers with markings, the lip being white, spotted with crimson, and furnished with a golden crest; *L. oruenta*, green and orange, the lip being orange and crimson; *L. aromatica*, yellow, with hairy lip; and *L. jugosa*, white, with purple stripes.

Lyceum, THE. was a famous gymnasium at ancient Athens, which stood outside the walls, to the south-east, on the bank of the Ilissus. It took its name from the temple of Apollo Lyceius, and was famous as the scene of the teaching of Aristotle and his followers, the Peripatetics. See Frazer's *Pausanias* (1900).

Lyceum Theatre, THE. This theatre is the third erected in the same site—Wellington Street, Strand, London. The first (built 1794-5) was not licensed till the Drury Lane company took temporary possession (1809), and was renamed the English Opera House (1810). The second was opened in 1816, when notable performances took place by Mrs. Keeley and Edmund Kean, until it was burnt down (1830). The third dates from 1834. The Mathews-Vestris management is memorable for Planché's 'fairy extravaganzas' and Beverley's transformation scenes. Fechter became manager (1863), and played in English and French. Under the Batemans' management (1873-78), Irving made his first appearance at the Lyceum, and inaugurated his own management (1878) by a revival of *Hamlet*, with Ellen Terry as Ophelia. From that time the house was largely identified with Shakespearean productions. It was transferred to a limited liability company (1899), and shortly afterwards (May 1901) the London County Council insisted on structural alterations.

which could not be carried out. Irving therefore gave his last performance there on July 19, 1902. The house was for a time a music hall, but was closed in 1906, and reopened as a theatre in 1907. Hall Caine's play *The Christian*, produced 1907, ran for 182 nights, and was followed by *The Manxman*, which was equally successful.

Lych-gate, or CORPSE-GATE, a covered, usually gabled church-yard gate, beneath which it was formerly customary for a bier to rest during the reading of the introductory part of the service.

Lychnis, a genus of plants, order Caryophyllaceæ, characterized by its flowers possessing a tubular, five-cleft calyx, five long-clawed petals, ten stamens united at the base with the stalk of the ovary, and five styles. Five species are natives of Britain, the commonest being *L. diurna*, the red robin or campion of our hedges, with its downy leaves and pink flowers; the white-flowered *L. resplendens* (evening campion), whose flowers become fragrant as night approaches; and *L. flos-cuculi*, the ragged robin of our marshes, with its purplish stems and narrowly-segmented, ragged, rose-coloured petals. Of the cultivated species, we may name *L. chalcedonica*, a Russian perennial bearing clusters of scarlet flowers in summer; *L. coronaria*, red-flowering; *L. fulgens*, a dwarf-growing, scarlet-flowered species, with several beautiful varieties, notably *L. f. Haageana*; and *L. viscaria*, the red German catch-fly, a rare British plant, with pink flowers.

Lycia was a district at the s.w. angle of Asia Minor, bounded on the w. by Caria, on the n. by Phrygia and Pisidia, and on the e. by Pamphylia. The inhabitants strenuously resisted Greek colonization; Croesus failed to conquer them, and the Persians

did so with difficulty, though in the 4th century B.C. they became subject to the Carian tyrants. In the 5th century they joined the Athenian league, but with the rest of Asia Minor they became subject to Rome. See Grote's, Holm's, and Bury's *Histories of Greece*; Wilson's *Asia Minor* (1895); Ramsay's *Historical Geography of Asia Minor* (1890); Fellowes's *Discoveries in Lycia* (1841); Bonndorf's *Reisen in Lykien und Karien* (1884).

Lycium, a genus of climbing or trailing plants, order Solanaceæ. Most of the species produce beautiful funnel-shaped flowers in great profusion. Among the best are *L. barbarum*, bearing yellow and purple flowers; *L. alatum*, a spiny shrub with solitary, drooping, yellow flowers; and *L. europaeum*, used for hedges in the Greek islands.

Lyck; or **LYK**, tn., prov. E. Prussia, Germany, 90 m. S.E. of Königsberg; contains on an island in Lake Lyck^a a castle of the Teutonic Knights dating from 1273. Manufactures machinery, paper, and leather. Pop. (1910) 13,427.

Lycksele, tn., Sweden, in Västerbotten, 75 m. N.W. of Umeå. Pop. (1911) 7,975.

Lycomedes, in ancient Greek legend, was the king of the Dolopians, in the isle of Scyros, to whose house Achilles was sent by his mother Thetis, in the disguise of a girl, to save him from the Trojan expedition. When Theseus sought his protection, Lycomedes treacherously hurled him over a rock. The story is told by Apollodorus, Pausanias, and Plutarch.

Lycoperdon, or **PUFF-BALL**, a genus of gasteromycetous fungi, several species of which are common in Britain, *L. gemmatum* being the most common. When they first appear they are masses of solid, nearly homogeneous,

white flesh; but as they grow older the white colour gives way to brown, and the solid mass is replaced by a dry and shrivelled rind or casing containing a fine brown powder—the spores.

Lycophron (c. 260 B.C.), a celebrated grammarian and poet of the Alexandrian school, was a native of Chalcis in Eubœa. His only extant work is the *Alexandra* or *Cassandra*, a long monologue consisting of 1,474 iambic versæ, in which Cassandra prophesies to Priam the destruction of Troy. Editions: Tzetzes (1546), Canter (1596), Potter (1702), Reichard (1788), Sebastian (1804), York (1806), and Holzinger (1895).

Lycopodium, a genus of plants commonly known as club mosses (order Lycopodiaceæ), many of them desirable and handsome plants. Among the stove species are *L. Hookerii*, an evergreen, and *L. phlegmaria*. Among the hardy species, which may be grown in the shade without glass protection, are *L. clavatum*, *L. dendroideum*, resembling a tiny fir tree, and *L. alpinum*, with prostrate stems and evergreen leaves.

Lycopolis, ancient city of Egypt, on the site of which ASSIUT now stands.

Lycurgus. (1.) A famous Spartan lawgiver, who is said to have lived about the beginning of the 9th century B.C. The common account is that he was the son of Eunomus, king of Sparta, and brother of Polydectes, the latter of whom succeeded to the throne, and then died, leaving his wife with child. When the child (Charilaos) was born, Lycurgus proclaimed him king, and acted as his guardian. He left Sparta for some time, and on his return found the country in a state of anarchy, when all parties called him to the task of restoring order. This he accomplished, redividing the

land among the citizens, and introducing the constitution, which, with few alterations, remained as long as Sparta existed as a state. He was afterwards worshipped as a god at Sparta. (2.) Athenian orator and statesman (c. 390-323 B.C.), who was a pupil of Plato and Isocrates, and supported Demosthenes against Philip. Alexander demanded his surrender (with that of Demosthenes) for inciting Thebes to revolt (336), but finally gave up his claim. Lycurgus was one of the leading statesmen at Athens, and was a most successful minister of the public revenue (338-326). Editions: Rehdantz (1876), Thalheim (1880), and Nicolai (1885).

Lyda, a genus of sawflies, hymenopterous insects (family Tenthredinidae), whose larvae are among the pests of the arboriculturist. Their pupal stage is passed in the soil, and they spin a web over leaves, within which web several larvae may usually be found. *L. Pyri* and *L. nemoralis* are the species which are most injurious to British fruit trees.

Lydbrook or **LIDBROOK**, vil., Gloucestershire, England, 14 m. w. of Gloucester. Coal, iron, and tin are mined in the neighbourhood. Pop. (dist.) 2,500.

Lydd, munici. bor. and mrkt. tn., Kent, England, 3 m. s.s.w. of New Romney. Lydd is an ancient tn. and a corporate member of the Cinque Port of Romney. 'Lyddite' shells are manufactured here. Pop. (1911) 2,874.

Lydda, or **Lon**, city, Palestine, on the plain of Sharon, 10 m. s.e. of Joppa, near the foot of the hills. According to 1 Chron. 8:12, it was founded by Shamed, of the tribe of Benjamin. It is noticed on monuments as early as 1600 B.C. It is now a small village (Ludd) with a church of St. George, founded in the 12th century A.D., and repeatedly destroyed and rebuilt.

Lyddite, a high explosive used in the British service as a bursting-charge for shells. It consists of picric acid, $C_6H_2(NO_2)_3 OH$, prepared by the action of nitric acid on phenol. This composition is melted and poured into the shell, when it solidifies and becomes lyddite. It is an intensely bitter crystalline solid of bright yellow colour, and is detonated with difficulty.

Lydenburg, cap. of div. of same name, Transvaal, South Africa, in a well-watered and fertile hollow at the w. base of Mauch Berg, 144 m. E.N.E. of Pretoria. It is a gold-mining town, in a district well suited for the cultivation of cereals (especially wheat), tobacco, sugar, and coffee; coal also occurs in the neighbourhood. Pop. 1,500.

Lydford, par. and vil., Devonshire, England, 8 m. s.s.e. of Okehampton. Before the Conquest and for long after, Lydford was the principal town of the Devonshire 'Stannary,' owing its importance to its position on the edge of the great tin-streaming district of Dartmoor. Pop. 2,800.

Lygate, JOHN (c. 1370-c. 1451), English poet, studied at Oxford, and entered the Benedictine monastery at Bury St. Edmunds. It was for Humphrey of Gloucester that he translated *Bochas upon the Fall of Princes* (1430); while the *Troy Book*, which was completed in 1420, was written by desire of the Prince of Wales, afterwards Henry V. Among his other works are *The Storie of Thibes*, *The Daunce of Machabre*, and *The Temple of Glas*.

Lydia, anc. dist. of Asia Minor, in the centre of the western end of the peninsula; bounded by Mysia on the N., Phrygia on the E., Caria on the S., and the Aegean Sea on the w. The coastland, however, was known as Ionia. The mountain range of Tmolus divides the district into

two valleys—that of the Hermus to the N., and that of the Oayster to the S. About 700 B.C. Gyges, a native Lydian, slew Candaules, the last Meonian king; thenceforth the country was known as Lydia. The dynasty founded by Gyges lasted for one hundred and fifty years; the last king, fifth in succession from Gyges, was the famous Croesus. Under this dynasty Lydia attained to great wealth and power. In 546 B.C., however, Croesus declared war against Cyrus the Great, was defeated, and lost his kingdom. It was in Lydia that coins were first invented, probably about 700 B.C.; the earliest coins were stamped bars of electrum, an alloy of silver and gold. By Cyrus's conquest Lydia passed into the Persian empire, in which it remained until Alexander, in return for the prompt submission of the Lydians, restored them their freedom in 334 B.C. It formed part of the Roman province of Asia from 133 B.C. The cap. was Sardis. See Schubert's *Geschichte der Könige von Lydien* (1884); Radet's *La Lydie et le Monde Grec au Temps des Mermades* (1883); Meyer's *Geschichte des Altertums* (1884); and Wilson's *Asia Minor* (1896).

Lydney, par., Gloucestershire, England, in Dean Forest, 9 m. N.E. of Chepstow; has coal and iron mines, and tinplate works. Pop. 3,600; rural d'v. (1911) 9,005.

Lye, par., Worcestershire, England, 2 m. E. of Stourbridge; has coal mines, and manufactures bricks, nails, anvils, and vices. Pop. 7,200; urban dist. of Lye and Wollensote (1911), 11,684.

Lye is a term applied to the alkaline solutions of potassium and sodium hydroxides and carbonates. It is used in soapmaking, in neutralizing an acid, and in removing grease from other substances.

Lyell, Sir CHARLES (1797-1875), geologist, was born at Kinnordy,

Forfarshire, Scotland; educated at Midhurst and Oxford, where he attended Buckland's lectures and became interested in geology. After graduating he studied law, but soon became more and more involved in geological work. With Murchison he visited Auvergne and Italy. Switzerland, Sicily, France, and Scotland were also the scenes of geological tours. The first volume of *The Principles of Geology* appeared in 1830, and two more volumes in subsequent years. His main idea was the uniformity of the operations of nature, and the sufficiency of the agents acting on the earth's surface at the present day to produce all the changes which were indicated by the rocks of the earth's crust. His other books are *The Elements of Geology* (1838), *Travels in North America* (1845), *A Second Visit to the United States* (1849), and *The Antiquity of Man* (1863). Lyell received a knighthood in 1848, and subsequently a baronetage. See *Life and Letters of Sir Charles Lyell*, ed. by Mrs. Lyell (1881), and Bonney's *Charles Lyell and Modern Geology* (1886).

Lygodium is a genus of tropical ferns of twining habit, all handsome, and of value to the stove-gardener. Among the best species are *L. volubile*, *L. japonicum*, *L. palmatum*, and *L. scandens*.

Lyly, JOHN (1553-1606), dramatist, was born in Kent. He was at Magdalen College, Oxford, and after some trouble with the authorities, took his B.A. degree in 1573 and his M.A. in 1575. An attempt to secure a fellowship through the influence of Lord Burleigh failed. In 1579 Lyly was incorporated M.A. at Cambridge. In the same year appeared the first part of his fantastically written and moralising romance, *Euphues*, and, possibly also his play of *Endywyton*, the

plot of which seems to turn on the relations of Elizabeth to her favourite, the Earl of Leicester. Llyl was appointed vice-master of the singing-school of St. Paul's, for whose performances most of his extant comedies were written. He was also in some way attached to the service of Lord Burleigh, took the anti-Puritan side in the Martin Mar-Prelate controversy, and wrote, perhaps in collaboration with Thomas Nash, the pamphlet called *Pappe with an Hatchet* (1589). He sat in various Parliaments for Hinton, Wilts; for Appleby, Westmorland; and for Aylesbury, Bucks. But in 1591 the St. Paul's performances came to an end, and Llyl's chief employment was gone. He had also been disappointed in his hope of the mastership of the revella. Little is heard of him from 1596 to his death. Romances—*Euphues, the Anatomy of Wit* (1579, etc.); *Euphues and his England* (1580, etc.)—both ed. E. Arber, 1868; ed. F. Landmann, 1887. Plays—*Campaspe* (1584, 1591); *Sopho and Phao* (1584); *Endimion* (1591; ed. G. P. Baker, 1894); *Galathaea* (1592); *Midas* (1592); *Mother Bombie* (1594, 1598); *The Woman in the Moone* (1597); *Love's Metamorphosis* (1601); *Collected Plays* (1632; ed. F. W. Fairholt, 1858; ed. R. W. Bond, with biography, 1902). See C. G. Child's *John Llyl and Euphuism* (1894), and Wilson's *John Llyl* (1905).

Lyme Regis, munici. bor., bathing and health resort, Dorsetshire, England, on s. coast, 22 m. w. of Dorchester. The district is of great geological interest on account of its 'blue lias' rocks. Monmouth landed here (1688) a few days before the battle of Sedgemoor. Pop. (1911) 2,772.

Lymington, munici. bor., seapt., and bathing resort, New Forest district, Hampshire, Eng-

land, 14 m. s.w. of Southampton. Pop. (1911) 4,329.

Lymm, par. and urban dist., Cheshire, England, 5 m. n. of Warrington. Pop. (1911) 4,989.

Lymph (Lat. *lympha*, 'water') is a clear, watery, albuminous fluid which bathes all the tissues of the body. It is faintly yellow or colourless, and is alkaline in reaction. Derived from the blood, it laves and nourishes the tissue elements, and returns to the circulation by the lymph vessels, bringing such pabulum as the tissues do not immediately require for their nutrition. It is poured into the large veins near the heart, and in its course through the lymphatic vessels and glands it acquires a number of cells known as lymph corpuscles, which on reaching the circulation become the lymphocytes of the blood. During digestion the lymph returned from the villi of the small intestine becomes charged with fatty molecules and extractives from the food. These change its character, giving it a milky appearance, so that the vessels are known as lacteals and the lymph as chyle.

Lymphatics are the superficial and deep vessels and glands which carry lymph throughout the body. The vessels are tubular, and their walls have three thin coats—epithelial, muscular, and fibrous. Like veins, they have valves formed of semi-lunar flaps, which direct the onflow of the lymph. The lymph enters the lymphatic capillaries by rootlets arising in the spaces between connective tissue cells, muscular fibres, etc., and by minute stomata or apertures between the epithelial cells of serous surfaces. There is no direct communication between the capillaries of the blood and those of the lymph, which must, therefore, irrigate intermediate tissues on its way from one set of vessels to the other. From the network

of lymphatic capillaries small lymphatic vessels arise, which either anastomose into larger trunks or pass to a lymphatic gland. The thoracic duct is the terminal trunk of the system. The duct conveys the chyle and the greater part of the lymph into the left subclavian vein at its junction with the internal jugular. The lymph from the right side of the head, neck, and chest, and from the right arm, is carried by the right lymphatic duct to the right subclavian vein. In the course of the lymphatic or lacteal vessels through the mesentery and thorax, and more superficially in the neck, groin, armpit, and popliteal space, are numerous glands, generally kidney-shaped, and varying from the size of a hemp seed to that of an almond. In man the onflow of the lymph is largely enforced by the respiratory movements, but some lower animals possess pulsating lymph hearts which supply the motive power.

From their powers of absorption, the lymphatics are specially liable to be infected by a poison introduced into the tissues. Tubercle bacilli spread from gland to gland, and frequently lead to caseation and to suppuration. Apart from such secondary invasions, the lymphatic system is sometimes the primary seat of disease, which may vary from a comparatively insignificant lymphoma, on the one hand, to a lymphosarcoma of extreme malignancy on the other.

In acute inflammatory conditions of the lymphatics (lymphangitis, and adenitis or adenalgia) rest is imperative, and hot fomentations, to which laudanum may be added, should be constantly applied. In the more chronic forms an early incision may save an unsightly scar, and prevent the spread of the disease.

Lynceus, in ancient Greek legend the name of two persons. (1.) A son of *Egyptus*, who married Hypernestra, one of the Danaides (*Horace*, Ode iii. 11). (2.) A son of Aphareus and Arene, and brother of Idas, and renowned for his keen sight. With Idas he took part in the Argonautic expedition. See IDAS, and Kingsley's *The Heroes* (1856).

Lynchburg, city, Virginia, U.S.A., in Campbell co., on the s. bk. of the James R., 100 m. w. by s. of Richmond; is the second manufacturing city of the state. The chief products are shoes, cast-iron pipes, cotton goods, agricultural implements, and tobacco, cigars, and cigarettes. Coal and iron are mined in the district. Pop. (1910) 29,494.

Lynch Law is another name for lawlessness. Charles Lynch (1736-96) was a farmer in Virginia, U.S.A., who supported revolutionary principles in the district where he lived by catching 'Tories' and infamous persons, and hanging them up by their thumbs till they cried out, 'Liberty for ever.' Hence the term has been applied to any rough-and-ready administration of justice by a mob. See J. E. Cutler's *Lynch Law* (1906).

Lyndhurst, par., New Forest div., Hampshire, England, 8 m. w. by s. of Southampton, contains the King's house, the official residence of the lord warden of the New Forest. Pop. (1911) dist. 4,108.

Lyndhurst, JOHN SINGLETON CORFEY, BARON (1772-1863), lord chancellor of England, was born at Boston, U.S.A., and graduated as second wrangler at Cambridge, England (1794). After a singularly successful legal career, during which he was solicitor-general (1819), attorney-general (1824), master of the rolls (1826), and three times lord chancellor, he was raised to the "peerage

(1827). In the Wellington cabinet he attained great influence, and was in a measure responsible for the memorable decision in 1829 on the Catholic Emancipation question, while his name is also attached to the Act of 1835 in connection with the Deceased Wife's Sister Bill. See Campbell's *Lives of the Chancellors*, vol. viii. (1869), Atlay's *Victorian Chancellors* (1905-8), and Martin's *Life of Lord Lyndhurst* (1883).

Lyndsay, SIR DAVID. See LINDSAY, SIR DAVID.

Lyne, REV. JOSEPH LEYCESTER. See IGNATIUS, FATHER.

Lyne, SIR WILLIAM JOHN (1844), treasurer of Australian Commonwealth since 1907. Though he had opposed federation, the first governor-general asked him (1900) to form a ministry. He declined, but took office as minister for home affairs (1901-3). He was secretary for public works (1885, 1886-7, and 1891-4), secretary for lands (1891), premier and colonial treasurer of New South Wales (1899-1901), and minister for trade and customs in the Commonwealth of Australia from 1903 to 1904 and 1905 to 1907.

Lynedoch, THOMAS GRAHAM, LORD. See GRAHAM.

Lymouth. See LYNTON.

Lynn. (1.) City and seapt., Essex co., Massachusetts, U.S.A., on the N. coast of Massachusetts Bay, 9 m. N.E. of Boston. It is one of the largest shoe manufacturing places in the world. Pop. (1910) 89,336. (2.) LYNN REGIS. See KING'S LYNN.

Lynn Canal, inlet, Alaska, stretching N. from Admiralty Is., with a length of 100 m. and a width of about 6 m. On its shores are Seward City, near Berners Bay, noted for mining, Skagway, and Dyea. It is the gateway to the Klondike region, and under the award of 1903 belongs to the United States.

Lynton and Lynmouth, two summer resorts on N. coast of Devon, England, near Exmoor, 15 m. N.E. of Barnstaple. Lynton is situated on a cliff 500 ft. high, with Lynmouth below. The two places are connected by a water-balance lift. Pop. Lynton (1911), 1,770; Lynmouth, about 400.

Lynx, a group of species belonging to the genus *Felis*, which differ from the true wild cats in the larger size, longer limbs, short, stumpy tail, and tufted ears. The colour is light brown or gray, spotted with a darker shade. In habitat the animals are largely arboreal, and they are remarkable for their ferocity and savage disposition. Their soft, thick fur is highly valued by furriers. In N. Europe and in Asia *Felis lynx* occurs; in N. America *F. canadensis* and *F. rufus*, the latter the American 'wild cat' or bay lynx, together with two other species or varieties. Asia has also three other species or varieties in addition to *F. lynx*.

Lynx, a small constellation north of Gemini, formed by Hevelius in 1690. It contains many double stars, one of which, 12 Lyncis, has a computed period of 486 years; the periods of 4, 14, and 38 must be much greater. R and S Lyncis are extensively variable in long periods.

Lyon Court. The Lyon Court is one of the judicatures of the kingdom of Scotland, the integrity of which is guaranteed by one of the articles of the treaty of Union of 1707. It is charged with (1) the administration of the laws of arms among his Majesty's subjects of Scottish descent; (2) the settlement of claims to precedence in Scotland; (3) the regulation of public processions and ceremonials; (4) the recording of pedigrees; and (5) the appointment and superintendence of the

officers styled messengers-at-arms, who are charged with the execution of legal diligence, authorised by the supreme courts of Scotland. The court is composed of the Lord Lyon and his brethren heralds. Its decisions on all matters of heraldry and precedence are final; but should any subject consider his matrimonial rights to be invaded by any sentence of the court, he may appeal for redress to the Court of Session. At what date the court was established is not clear. The Lyon herald is referred to in the Exchequer Rolls of 1377, and the earliest official armorial now in existence is that executed by the post Sir David Lindsay of the Mount, then Lyon King of Arms, in the reign of King James V. (1513-42). His work was acknowledged as the official register for the kingdom by the Privy Council of Scotland on December 9, 1630. The present register is complete from the year 1672, and no persons of Scottish descent whose arms are not registered in it have the right to use armorial bearings. By an act of Parliament passed in the reign of King Charles II., Sep. 10, 1672, the Lyon King and his brethren heralds are empowered, not only to matriculate the arms of those entitled to record, but also to grant arms to virtuous and well-deserving persons—a phrase liberally translated by the Lyon Court. The court of the Lord Lyon at present consists of the Lord Lyon King of Arms, Albany, Ross, and Rothesay heralds, and Carrick, March, and Unicorn pursuivants. The staff includes a Lyon clerk and keeper of the records (who for a considerable time past has been one of the heralds), a procurator fiscal, a herald painter, and mace. The offices are situated in H.M. General Register House, Edinburgh. See HERALD.

Lyonesse, the land of the Arthurian legends, in which was Arthur's city of Camelot, variously held to have been either the present Cornwall or a country stretching beyond it westwards and now covered by the sea. It is the scene of the story of Tristan and Iscuit, and of the episodes included in Tennyson's *Idylls of the King*. See Malory's *Morte d'Arthur*, and other works dealing with the Arthurian legends. See also Swinburne's *Tristram of Lyonesse* (1883).

Lyonia, a genus of North American and West Indian shrubs and trees, order Ericaceæ, with alternate leaves and small flowers with urceolate corollæ. Among the species are *L. ferruginea*, with white flowers in spring, the whole plant being covered with rusty-looking scales; and *L. ligustrina*, a hardy shrub, bearing clusters of small white flowers.

Lyon King of Arms. See LYON COURT, and HERALD.

Lyonnais, anc. prov. of France; it formed one of the Roman divisions of Gaul. At first part of Burgundy, it was united to France in 1310, and forms the departments of Loire and Rhône.

Lyons (Fr. Lyon; Lat. *Lugdunum*), city and episc. see, dep. Rhône, France, stands at the confluence of the Rhone and the Saône, and is the third city of the country. It is 240 m. s.e.e. of Paris, and 170 m. N. by w. of Marseilles. The city, a fortress of the first class, is also fortified by a strong wall (13 m. in circumference) on the N. and E. sides. The silkworms reared in the Rhone valley, and the proximity of coal and iron (at St. Etienne, 36 m. to the s.w.), have made Lyons the first silk-manufacturing town in France. The city is likewise the natural focus of commerce from N. and S., and both the Rhone and the Saône

are connected by canals with all the great waterways of France. Lyons is adorned with numerous interesting and beautiful buildings, and possesses a state university ranking next to that of Paris in the number (2,500) of its students, and a public library, which boasts some of the earliest extant specimens of printing. The silk industry (first established in 1450 by Italian refugees) is centred in the city, but most of the factories lie in the surrounding country towns and villages—such as Villeurbanne, Ste. Foy, Caluire-et-Cuire, etc. The value of the silk and stuff production is about £16,000,000 annually. The export of manufactured silk goods in 1910 was valued at £14,980,480. Other manufactures are those of cottons, hardware, dyes, chemical products, starch, candlea, soap, paper-hangings, photographic articles, automobilia, gold, silver, tobacco, and machinery.

Lyons was founded B.C. 40, and under Augustus was made the capital of Celtic Gaul. The city was the scene of early Christian persecutions in the 2nd century; was ravaged by barbarians, and later, in 736, by the Saracens; and became the capital of the Burgundians in 478. It suffered severely during the religious wars of the 16th century, and during the Revolution (1789-93). Pop. (1911) 520,795. See works for topography by Joanne (1886), and for history by Metzger (1881-5).

Lyons, co. seat of Wayne co., New York, U.S.A., 35 m. E.E. of Rochester. Pop. 5,000.

Lyons, GULF OF. See LIONS, GULF OF.

Lyons, EDMUND, LORD (1790-1868), English vice-admiral, born at Burton, Hants; distinguished himself in the capture of Banda Neira (1810), and in the storming of Magrak (1811); commanded in the Mediterranean (1838-39),

rendering great services to the cause of Greek independence; afterwards appointed British minister at Athens, where he remained until 1849, subsequently occupying other diplomatic positions. At the outbreak of the war with Russia he became second in command in the Black Sea, and soon afterwards commander-in-chief in the same waters. Created a military G.C.B., Lyons was raised to the peerage for his services during the war (1856).

Lyons, RICHARD BICKERTON PRIMELL (1817-87), Earl Lyons, educated at Winchester and Oxford; became minister at Washington (1858), ambassador at Constantinople (1865), and at Paris (1867-87). During such crises as the *Trent* difficulty (1861) and the Franco-German war (1870-1) he showed firmness and discretion.

Lyra, an ancient constellation, situated on the borders of the Milky Way, near Cygnus. Its primitive association with an eagle or vulture survives in the name *Vega*, its largest star. Two pairs of white stars of fifth and sixth magnitudes are combined in the quadruple system of ϵ Lyrae. β Lyrae is a spectroscopic binary, varying in light from 3 $\frac{1}{4}$ to 4 $\frac{1}{2}$ in 12 days 21 $\frac{1}{2}$ hours, and shows a remarkably fluctuating bright-line spectrum. Other variables are R V Lyrae, eclipsed once in 3 $\frac{1}{2}$ days; γ Lyrae, a specimen of the 'cluster-type'; and R T, V, W, and Z Lyrae, all belonging to the Mira class. β^1 is a spectroscopic binary; period, 4 $\frac{1}{3}$ days. The wonderful 'Ring-nebula' (Messier 57) lies between β and γ Lyrae.

Lyre, an ancient musical stringed instrument of Eastern origin. It consisted of a hollow resonant body, from each end of which rose a gracefully curved horn-shaped arm, turning out-

wards at the top. The upper parts of the two arms were connected by a cross-bar, to which the strings were attached; and the latter, after passing over a bridge resting on the body, had their lower ends fastened to the bottom of the instrument. The strings, varying in number from three to eighteen, were sounded by being struck with a plectrum held in the right hand, while the fingers of the left hand checked the vibrations of those strings required to be silent. The Greek cithara was a large form of lyre.

Lyre-birds are interesting passerine birds, found only in Australia, and remarkable for the two lyrate feathers found in the tail of the male. The birds live chiefly on the ground, and their long and stout metatarsi, straight and powerful claws, and strong bill justify the Australians in their designation of 'pheasant,' although these resemblances to a game-bird are superficial only. The wings are rounded and rather short; and in the tail, in addition to the lyrate plumes, there are twelve feathers without barbules, and with widely-separated barbs, and two with very narrow webs. The lyre-bird of New South Wales and Queensland (*Menura superba*) is dull brown, with rufous throat, wings and tail coverts, and transparent notches on the outermost tail feathers. It reaches a length of thirty-three inches. The bird lays only one egg, and the nest is oval and domed.

Lyric (*λύρα*, 'lyre,' a stringed instrument used by the Greeks) is, according to its derivation, poetry sung to a musical accompaniment, as opposed to epic, spoken or recited poetry, and dramatic, which combines lyric and epic. In elegiac poetry the emotional quality is balanced by one no less strong of reflection; in idyllic poetry by one no less strong of description. These two

make up the bulk of modern poetry, together with pure lyric, in which, whatever else may be present, the emotional quality is supreme. The distinctions here drawn are between poetical moods rather than between individual poems, which do not, of course, lend themselves to any such precise classification.

Historically speaking, lyric began with communal or folk-song, in which a group of workers in the common field or spinning-house, or of revellers at the common festival, expressed to the rhythms of toil or of the dance their common and primitive emotions. But so far as the spirit of lyric is concerned, the whole tendency of modern development has been to get away from folk-song, and to substitute for the expression of a communal emotion that of an emotion which is as personal and intimate as possible. This process had been in part anticipated in Greece, where the personal lyric of Alceus and Sappho of Lesbos and Anacreon of Teos stands side by side with the choral lyric of Pindar of Thebes and Bacchylides of Ceos, and of the great Attic dramatists, in which much of the communal element is preserved. Latin lyric, in Catullus and Horace, is mainly an exotic thing borrowed from Greece. A native Italian lyric comes to artistic form once, and once only, in the *Perriguum Veneris* of the 2nd century A.D. Medieval romance lyric, on the other hand, makes a fresh start from folk-song, out of which the minstrels of N. France, Provence, and Italy developed a large number of distinct types of song. These include the sonnet, the ballade, the rondeau, the rondel. Simultaneously a religious lyric grew up at the hands of the great Latin hymn-writers, such as Adam of St. Victor.

The earlier history of English

lyric is obscured by the non-lyrical character of such Anglo-Saxon poetry as remains, and by the blotting out of English as a literary tongue for two centuries after the conquest. Under the early Tudors the song, in the strict sense, becomes of importance. The fashion of singing to the lute, viol, or virginals endures right through the Elizabethan period, and largely determined the character of lyric poetry. The lyric of Thomas Campion and of the innumerable and mainly anonymous writers of the songbooks, the lyric of Thomas Lodge and Nicholas Breton, the lyric scattered through the plays and masks of Shakespeare, of Ben Jonson, of Beaumont and Fletcher, is primarily intended to be sung. Meanwhile more elaborate and artificial forms of lyric were introduced as a result of the study of European and classical poetry. Sir Thomas Wyatt and the Earl of Surrey, under Henry VIII., naturalized the sonnet. Edmund Spenser is mainly responsible for the Greek forms of ode and epithalamium, and for the pastoral convention so dear to the Elizabethan writers. Spenser is the dominant influence in English lyric until well into the 17th century, when the example of John Donne, far less musical but more intellectualized, individual, and passionate, led to the formation of a group of court poets, among whom were Thomas Carew, Sir John Suckling, William Habington, Abraham Cowley, and Thomas Randolph. Somewhat aloof from these, and with more affinities to the earlier school, stand John Milton, Andrew Marvell, and Robert Herrick. A group of religious lyrists includes the Anglican George Herbert and Henry Vaughan, and the Catholic Richard Crashaw. The transition from the imaginative lyric of Donne to the witty lyric

of the restoration is represented by Edmund Waller; and the latter itself by Sir Charles Sedley, the Earl of Rochester, and John Dryden. Thereafter lyric disappears from English literature, until at the end of the 18th century the voices of William Collins and William Blake herald the second great lyrical period, which has extended from Wordsworth, Coleridge, Byron, Shelley, and Keats to the writers of our own day.

See general histories of literature and poetry. For selections, see F. T. Palgrave's *Golden Treasury of Songs and Lyrics* (1861; 1883; pt. ii., 1897; new ed. 1903); R. C. Trench's *Household Book of English Poetry* (1868, 1870); T. H. Ward's *The English Poets* (1887-94); A. H. Bullen's *Lyrics from the Song Books of the Elizabethan Age* (1888, 1891), *Lyrics from the Dramatists of the Elizabethan Age* (1891); A. H. Miles's *Poets and Poetry of the Century* (1891-97; new ed. 1904-5); W. Watson's *Lyric Lore* (1892); R. H. Caine's *Love Songs of English Poets* (1892); G. Saintsbury's *Seventeenth Century Lyrics* (1892); H. C. Beeching's *A Paradise of English Poetry* (1893, 1896); A. T. Q. Couch's *The Golden Pomp* (1895), *Oxford Book of English Verse* (1902); F. E. Schelling's *Elizabethan Lyrics* (1895), *Seventeenth Century Lyrics* (1899); J. C. Collins's *Treasury of Minor British Poetry* (1896); A. Meynell's *The Flower of the Mind* (1897); W. E. Henley's *English Lyrics* (1897); F. I. Carpenter's *English Lyric Poetry* (1897); Stanhouse's *Illustrations of the Lyric Poetry and Music of Scotland* (1853); E. Arber's *British Anthologies* (1899-1901); J. and C. Masefield's *Lyrists of the Restoration* (1906); E. K. Chambers's *Early English Lyrics* (1907); and Gowans's *Lyric Masterpieces of Living Authors* (1909).

Lys, riv., France and Belgium, rises in dep. Pas-de-Calais, and flows N.E. through Nord to form the boundary between France and Belgium. It then continues N.E. through W. and E. Flanders, and after a course of 120 m. falls into the Scheldt at Ghent.

Lysander, famous Spartan commander, was a son of Aristocritus, of the royal Heraclid house. He became prominent first in the year 407 B.C. in the Peloponnesian war, when he was sent out as navarch, or commander of the fleet. His diplomatic abilities and his genius as a commander soon ended the war. In 406 B.C. Callicratidas succeeded him in the office of navarch, which the Spartan laws forbade the same man to hold twice. On the request of the Spartan allies, they sent him out nominally under the authority of a nonentity, Aracua, who was navarch, but really with full control of affairs; and that year he captured the whole Athenian fleet of 180 ships, with the exception of twenty, at Egospotami. He then occupied Aegina, blockaded the Piraeus, and in three months Athens surrendered. About 403 B.C. he seems to have formed an idea of changing the constitution of Sparta by making the monarchy elective instead of hereditary—of course with the view of obtaining it for himself; but he failed. Then he secured the appointment of Agesilaus—who was, he thought, likely to prove a mere tool in his hands—to the monarchy, on the death of Agis (398 B.C.); but Agesilaus at once asserted himself, and took command in Asia (396 B.C.). During the war with Thebes (395 B.C.) Lysander fell in battle before Haliartus. There is a Life of him by Plutarch, while Xenophon is the other chief authority.

Lysias (c. 450–c. 380 B.C.), one of the ten Attic orators, was born

at Athens, though he was not an Athenian citizen, his father, Cephalus, being a Syracusean. At the age of fifteen Lysias went to Thurii in Italy, and is there said to have studied rhetoric under Timias (c. 412 B.C.). He returned to Athens, and there lived prosperously with his brother Polemarchus until 404 B.C., when their wealth attracted the attention of the Thirty Tyrants. Polemarchus was killed, while Lysias just escaped with his life, losing most of his fortune; retaining however, to aid in the restoration of the democracy (403 B.C.). He devoted the rest of his life to writing speeches for pay. He is said to have composed over two hundred speeches, thirty-four being extant in whole or in part, of which all but two—and these two only in fragments—are court speeches. They are of great interest for the light which they throw upon Athenian legal procedure and the life of the time, and are remarkable for their perfection of style. Editions—Text: Baier and Sauppe (1850), Cobet (1863), Weidner (1888); with notes: Shuckburgh (1888), Kock (1887), and Morgan (1896). See Jebb's *Attic Orators* (1876), and Mahaffy's *History of Classical Greek Literature* (1880).

Lysimachia, a genus of flowering plants, order Primulaceæ. They are mostly natives of the northern temperate regions, but a few species are tropical. The flowers are usually characterized by a five-cleft calyx, a five-cleftrotate or funnel-shaped corolla, and a capsule opening by valves. The commonest British species is *L. nummularia*, the herb-twopenny, creeping jenny, or moneywort, which frequents damp, shady places, such as river banks and woods. The wood loosestrife, or yellow pimpernel, *L. nemorum*, is another common British species.

Lysimachus (360-281 B.C.), one of the generals of Alexander the Great, got the government of Thrace (323 B.C.), the title of king (306 B.C.), and with Seleucus defeated Antigonus at Ipsus (301 B.C.). In 291 a king of the Getae took him prisoner, but soon restored him to liberty. In 287, with Pyrrhus, he expelled Demetrius from Macedonia, of which Pyrrhus became king; but in 286 Lysimachus drove him out, and assumed the monarchy. He fell in battle against Seleucus on the plain of Corus (281 B.C.). Arrian, Curtius, Diodorus, and Plutarch are the chief ancient authorities.

Lysippus, Greek sculptor, was a contemporary of Alexander the Great, who ordered that no one except Lysippus should carve his statue. His works are said to have numbered 1,500, nearly all in bronze. None of them are extant.

Lys-les-Lannoy, comm., Nord dep., France, 7 m. E. by N. of Lille, near the Belgian frontier. Pop. 6,500.

Lystra, city of Lycaonia, Asia Minor; famous chiefly from the fact that St. Paul and St. Barnabas preached there. See Wilson's *Asia Minor* (1886), and Ramsay's *Historical Geography of Asia Minor* (1890).

Lyte, HENRY FRANCIS (1793-1847), Scottish hymn-writer, born at Ednam, near Kelso. Lyte took holy orders, and, after holding several curacies, was appointed to the charge of Lower Brixham, where he officiated (1823-44). Among his best-known hymns are *Abide with me*, *Pleasant are Thy courts above*, and *Praise, my soul, the King of Heaven*. See his *Remains*, with Memoir (1850), and Carr's *Border Memories* (1876).

Lytham, par. and tn., Blackpool div., Lancashire, England, on riv. Ribble, 6 m. S.E. of Blackpool; is a favourite watering-place during spring and sum-

mer. At Lytham Pool, 1 m. N.E., are a graving dock and harbour. Pop. (1911) 9,464.

Lythraceæ, a natural order of plants, trees, herbs, and shrubs, most of which are natives of tropical America. The flowers are usually characterized by possessing a multipartite, tubular calyx, from the tube of which spring the stamens, a single style, and a many-seeded capsule. Among the genera are *Lythrum*, *Grislea*, *Peplis*, and *Cuphea*.

Lythrum (loosestrife), a genus of plants belonging to the order Lythraceæ. They are characterized by having a cylindrical calyx with twelve parts, and a corolla of six petals. The commonest British species is *L. salicaria*, the purple loosestrife. A less common species is *L. hyssopifolia*, the hysop-leaved purple loosestrife, which is much smaller, and bears solitary flowers. Among the garden species are *L. Grecieri*, from the south of Europe; and the hardy *L. alatum*, a North American species.

Lyttelton, chief port of Canterbury, South Island, New Zealand, 6 m. S.E. of Christchurch, in a rich agricultural district. The harbour, about 10 m. long and 2 m. wide, is enclosed by steep hills, the walls of an extinct volcano. The port encloses 110 acres, has a large graving dock, and the largest export trade for New Zealand. Pop. 4,000.

Lyttelton, ALFRED (1857), British statesman, son of 4th Baron Lyttelton, was educated at Eton and at Trinity College, Cambridge, where he took honours in history and the oration prize. He was called to the bar (1881), took silk (1900), and was appointed successively recorder of Hereford (1894) and Oxford (1895). He represented Warwick and Leamington as a Liberal Unionist from 1895 to 1906, and St. George,

Hanover Square, London, from 1906, for which he was elected at a bye-election; and is a member of the council of the bar. He was chairman of the Transvaal Concessions Commission, which held its inquiry in S. Africa during the latter part of 1900. From 1903-5 he was Secretary of State for the Colonies. A famous athlete, he has played both cricket and football for England, and was tennis champion (1883-95).

Lyttelton, Rev. EDWARD, (1855), brother of above, headmaster of Eton College since 1905. He was educated at Eton and Trinity College, Cambridge. He was headmaster, Haileybury, from 1890 to 1905. Among his published works may be mentioned—*Are we to go on with Latin Verses* (1897); *Studies in the Sermon on the Mount* (1905); *Schoolboys and Schoolwork* (1909).

Lyttelton, GEORGE, LORD (1709-73), English statesman, was educated at Eton and Oxford, and entered the House of Commons (1730) as an opponent of Walpole. Resigning his post as a lord of the Treasury (1754), he became a Privy Councillor, and in the following year Chancellor of the Exchequer, but resigned in 1756, when he was raised to the peerage. He published *Observations on the Conversion and Apostleship of St. Paul* (1747), and a *History of Henry II.* (1764), besides some poems. His Works were edited by Ayscough (1776). See also Phillemore's *Memoirs and Correspondence of George, Lord Lyttelton* (1845).

Lyttelton, GEORGE WILLIAM, FOURTH BARON (1817-76), was born in London, and educated at Eton and Cambridge. Deeply interested in the education of the working classes, he took an active part in the formation of the Birmingham Midland Institute, Saltley Training College, and in the formation of night schools. An-

other of his special interests was the colonial empire of Great Britain, and he formed one of the 'Canterbury Association,' which settled the province of Canterbury, New Zealand—the seaport Lyttelton there being named after him. Along with Mr. Gladstone he published a volume of translations into Latin and Greek (1839); he also printed several lectures on colonial matters. Among his sons are the Right Hon. Alfred Lyttelton (1857); the Hon. Canon Edward Lyttelton (1858), appointed headmaster of Eton College in 1905; and the Hon. George William Spencer Lyttelton (1857), formerly private secretary to Mr. Gladstone, and afterwards to Earl Granville.

Lyttelton, SIR NEVILLE GERALD (1845), son of fourth Baron Lyttelton, British general, was educated at Eton. Joining the Rifle Brigade (1866), he served with that regiment in the Fenian rebellion in Canada (1866), in the Jowaki expedition (1877), and in the Egyptian campaign (1882), when he was present in the engagements at Tell-el-Mahuta, Kasassin, and Tell-el-Kebir. In the Sudan campaign, under Lord Kitchener (1898), he was in command of the 2nd Brigade, British division, and was engaged in the battle of Omdurman, or Khartum, when he was promoted to be major-general. Lyttelton served throughout the Boer war, taking part in all the operations which finally resulted in the relief of Lady-smith (1900), including the battle of Colenso and of Vaal Krantz, which he captured and occupied. He was promoted lieutenant-general (1900), and created K.C.B. (1902), G.C.B. (1907), and G.C.V.O. (1911). He was appointed commander-in-chief in S. Africa (1902). On the reorganization of the War Office he was made chief of the general staff (1904). Since

1906 he has been general officer commanding-in-chief the forces in Ireland.

Lyttelton, THOMAS, LORD (1744-79), politician, son of the first baron, entered the House of Lords (1774), and vigorously attacked the ministerial mismanagement of the American war, at the same time denouncing the opposition. The fulfilment of his mysterious death-warning by a dream of a dove and a white lady created a great sensation at the time. His *Poems by a Young Nobleman* was published in 1780. The *Letters* (1780-2) once ascribed to him were probably written by William Combe.

Lyttleton, SIR THOMAS.
See LITTLETON.

Lytton, EDWARD GEORGE EARL LYTTON BULWER, BARON LYTTON (1803-73), novelist, dramatist, and politician, was born in London, and educated at Cambridge, where he won the Chancellor's medal for poetry. The first work to bring him into prominence was his novel *Pelham*, published anonymously in 1828. This brilliant picture of contemporary life won him the fame that some early poems and a fantastic romance, *Falkland* (1827), had failed to do; and its success was continued by *The Disowned* (1829), *Devereux* (1829), *Paul Clifford* (1830), *Eugene Aram* (1832), and *Godolphin* (1833). In *The Pilgrims of the Rhine* (1834) he made a more successful essay in the romance of a quasi-German type of which *Falkland* had been a tentative example; and immediately afterwards, with *The Last Days of Pompeii* (1834) and *Rienzi* (1835), showed an unsuspected power of sustaining human interest in archaeological and historical fiction. *Ernest Maltravers* (1837) and its sequel *Allies* (1838) were a return to the style of *Pelham*; and then for some years his versatility found

a new outlet in the drama. Under Macready's management, and to some extent under his guidance, he had produced at Drury Lane a poetical play, *The Duchess of La Vallière* (1836), with but small success. This was now followed by *The Lady of Lyons* (1838), the only English poetical drama of the period which still holds the stage, *Richelieu* (1839), and his evergreen comedy *Money* at the Haymarket in 1840. Meantime he had achieved no mean reputation in the House of Commons, where he sat as Liberal member for St. Ives from 1831 to 1832, and for Lincoln from 1832 to 1841. He eventually returned to Parliament in 1862 as a Conservative, and represented Hertfordshire till 1866, when he was raised to the peerage. Works of fiction from his pen continued from 1841, the most popular examples being *Zanoni* (1842), *The Last of the Barons* (1843), *Lucretia* (1847), *Harold* (1848), *The Caxtons* (1849), *My Novel* (1853), *What will he do with it?* (1859), *A Strange Story* (1862), *The Coming Race* (1871), *The Parisians* (1873), and *Kenelm Chillingly* (1873). He published several volumes of verse. The chief of these are two fairly successful satires, *The New Timon* (1846) and *Saint Stephen's* (1860); a romantic epic, *King Arthur* (1848-9); and *The Lost Tales of Miletus* (1866). His collected works were published in 37 vols. (1873-5); a *Life* of him by T. Cooper (1873); an unfinished autobiography, edited by his son (1883); and a monograph by T. H. S. Escott (1910).

Lytton, EDWARD ROBERT BULWER, FIRST EARL LYTTON (1831-91), son of the preceding, statesman and poet, was born in London. He won a literary reputation by his poems under the pseudonym of Owen Meredith. Previously to his succeeding (in 1873) to his father's title

he was secretary of legation at various European capitals, and had published *Clytemnestra* (1855), *The Wanderer* (1859), *Lucile* (1860), *Serbok Peeme* (1861), *The Ring of Amasis* (1867), *Chronicles and Characters* (1867), *Orval* (1869), *Fables in Song* (1874). From 1874 to 1876 he was British ambassador at Lisbon, until his appointment as viceroy of India. His Indian administration was rendered notable by his diplomatic services in connection with the Afghan war, by his energetic campaign against famine, and by the proclamation of Queen Victoria as Empress of

India. He was created Earl of Lytton in 1880. After his return to England he published his father's unfinished biography (1883); *Glenaverril*, a narrative poem (1886); and *After Paradise* (1887). He was appointed (1887) ambassador at Paris, where he died suddenly. As a poet, his work is more distinguished by brilliancy than by any deeper quality. He is at his best in his lightest vein, as in *Fables in Song*, or the posthumously published *King Poppy* (1882). See Lady Betty Balfour's *History of Lord Lytton's Indian Administration* (1899).

